



APC-3x82/83 User Manual

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Aplex Technology, Inc.

15F-1, No.186, Jian Yi Road, Zhonghe District, New Taipei City 235, Taiwan

Tel: 886-2-82262881 Fax: 886-2-82262883 E-mail: aplex@aplex.com.tw URL: www.aplex.com.tw

Warning! _____

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

This information in this document is subject to change without notice. In no event shall Apex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

Packing List

Accessories (as ticked) included in this package are:
<input type="checkbox"/> AC power cable
<input type="checkbox"/> Driver & manual CD disc
<input type="checkbox"/> Other. _____ (please specify)

Safety Precautions

Follow the messages below to avoid your systems from damage:

- ◆ Avoid your system from static electricity on all occasions.
- ◆ Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- ◆ Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1 Getting Started

1.1 Specifications

<div>Model No.</div> <div>Specs</div>	APC-3282/3283	APC-3582/3583	APC-3782/3783	APC-3982/3983
System				
Processor	Intel Atom D525 1.8GHz processor FSB 800MHz			
System Chipset	Intel ICH8M Chipset			
System Memory	1 x 204 Pin SO-DIMM DDR3 800GHz, up to 2GB SDRAM			
Storage	1 x 2 .5" SATA HDD Space 1 x CF Internal Slot 1 x CF External Slot for option (except APC-3282/3283)			
External I/O Port	4XUSB 2.0 2XGbE RJ-45 LAN port 1XDB-15 VGA (disable for use) 1XDB-9 RS422/485(default RS-485) 1XDB-9 RS-232 1XDC Power input T/B connector 7 Pin T/B for 2in/out/1Ground/Switch±			
Expansion Slots	None			
OSD	OSD control Brightness/ Screen and Touch on/off /Power on/off (APC-3782/3783/3982/3983 add auto tune function key)			
OS support	Windows XP Pro, XP Embedded, Windows Embedded Standard 7			
LCD				
Display Type	12.1”TFT-LCD	15”TFT-LCD	17”TFT-LCD	19”TFT-LCD
Max. Resolution	800x600	1024x768	1280x1024	1280x1024
Max. Color	262K			
Luminance (cd/m2)	350	400	350	350
View Angle	H:130° / V:110°	H:160° / V:140° (APC-3582) H:140° / V:110° (APC-3583)	H:170° / V:160°	H:160° / V:160°
Backlight Lifetime	50,000 hrs			
Touch Screen				
Type	Resistive Touch			
Light Transmission	80%			
Power Supply				
Power Input	DC 11~32V			

Mechanical				
Construction	Stainless Steel Housing (APC-3X82) / Steel Housing (APC-3X83)			
IP Rating	Front Panel IP65 / 6 sides IP42 with waterproof kit			
Mounting	VESA 75x75 Mount	VESA 75x75 Mount	VESA 75x75 Mount	VESA 100x100 Mount
Dimensions (WxHxD)	335(W)x265(H)x67(D) mm	399(W)x324(H)x67(D) mm	432(W)x358(H)x66.8(D)mm	470(W)x388.6(H)x67(D)mm
Environmental				
Operating Temperature	0~50 ° C			
Storage Temperature	-20~60 ° C			
Storage Humidity	10~90% @40 ° C non-condensing			
Certificate	CE/FCC Class A			

1.2 Dimensions

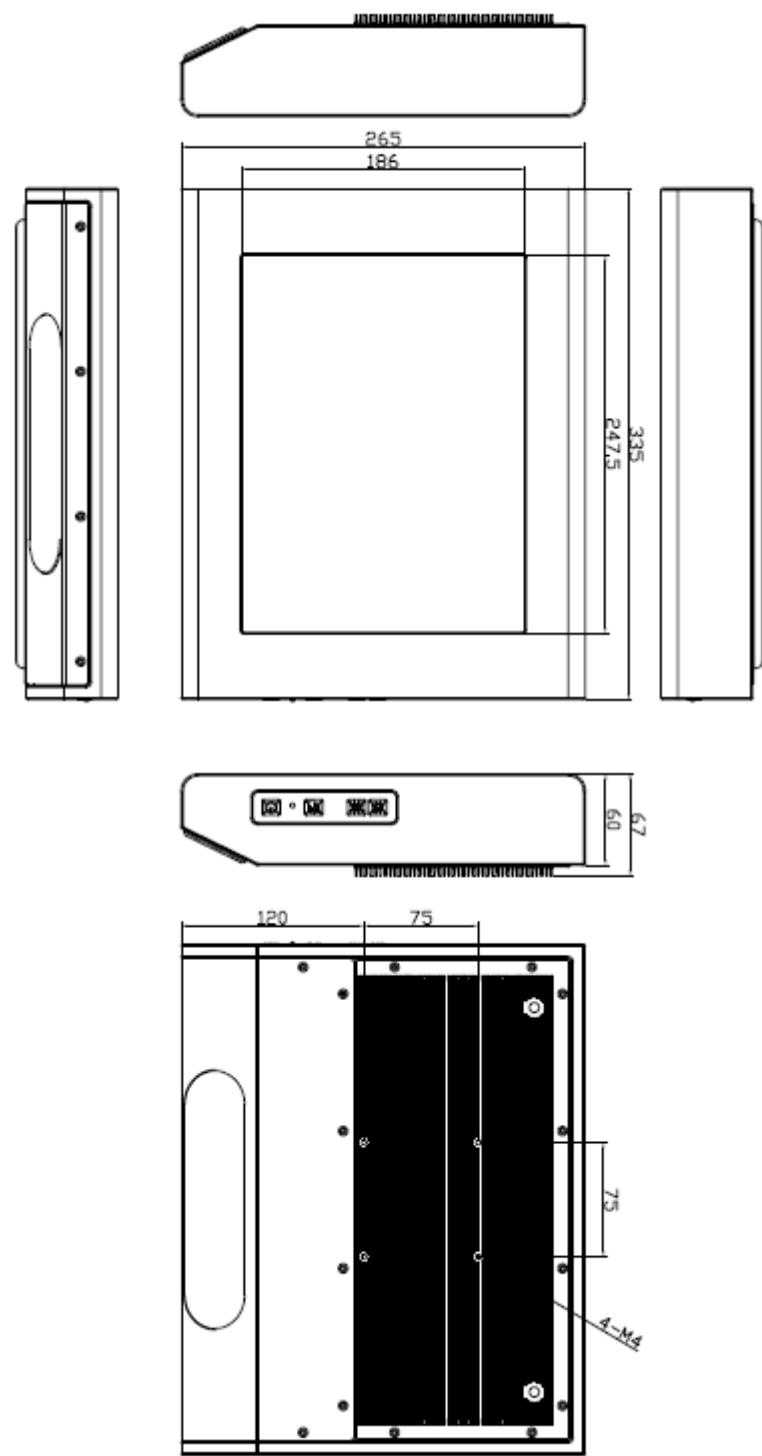


Figure 1.1: Dimensions of APC3282/ APC-3283

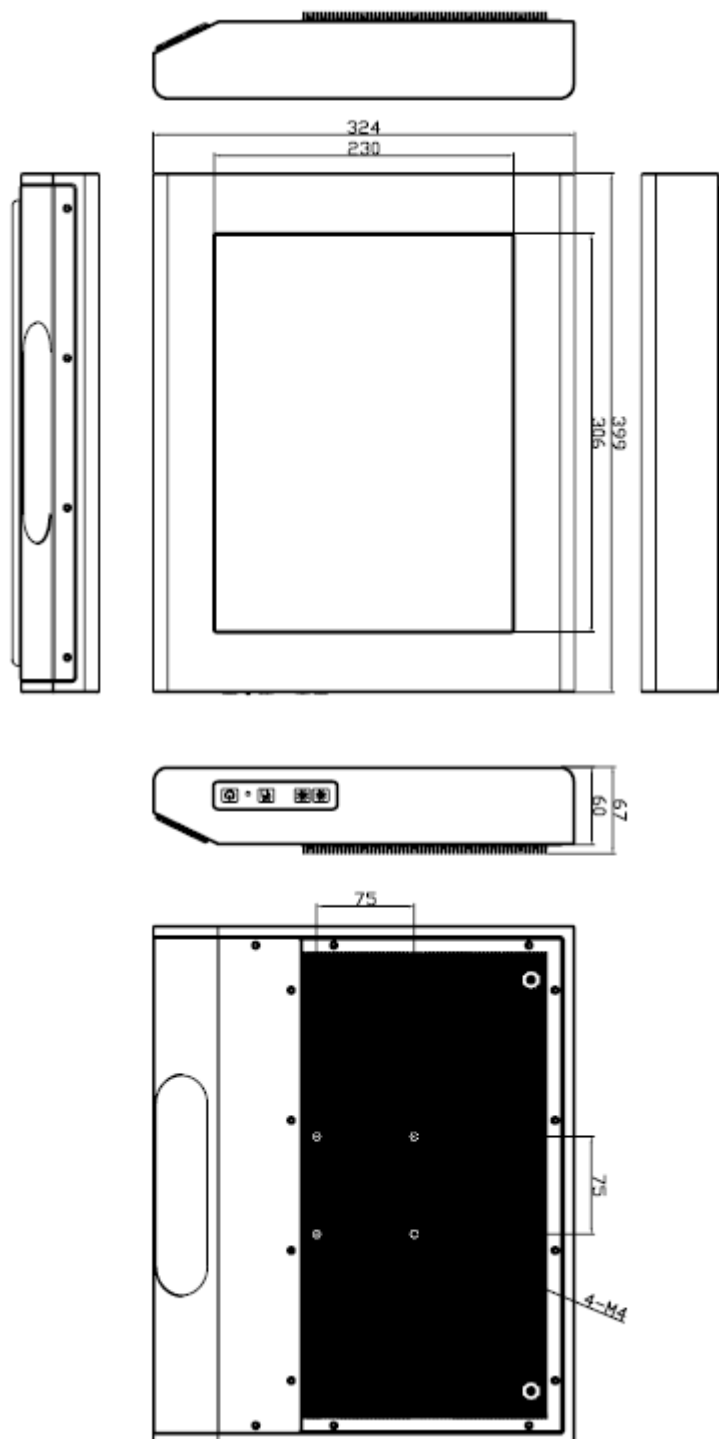


Figure 1.2: Dimensions of APC-3582/APC-3583

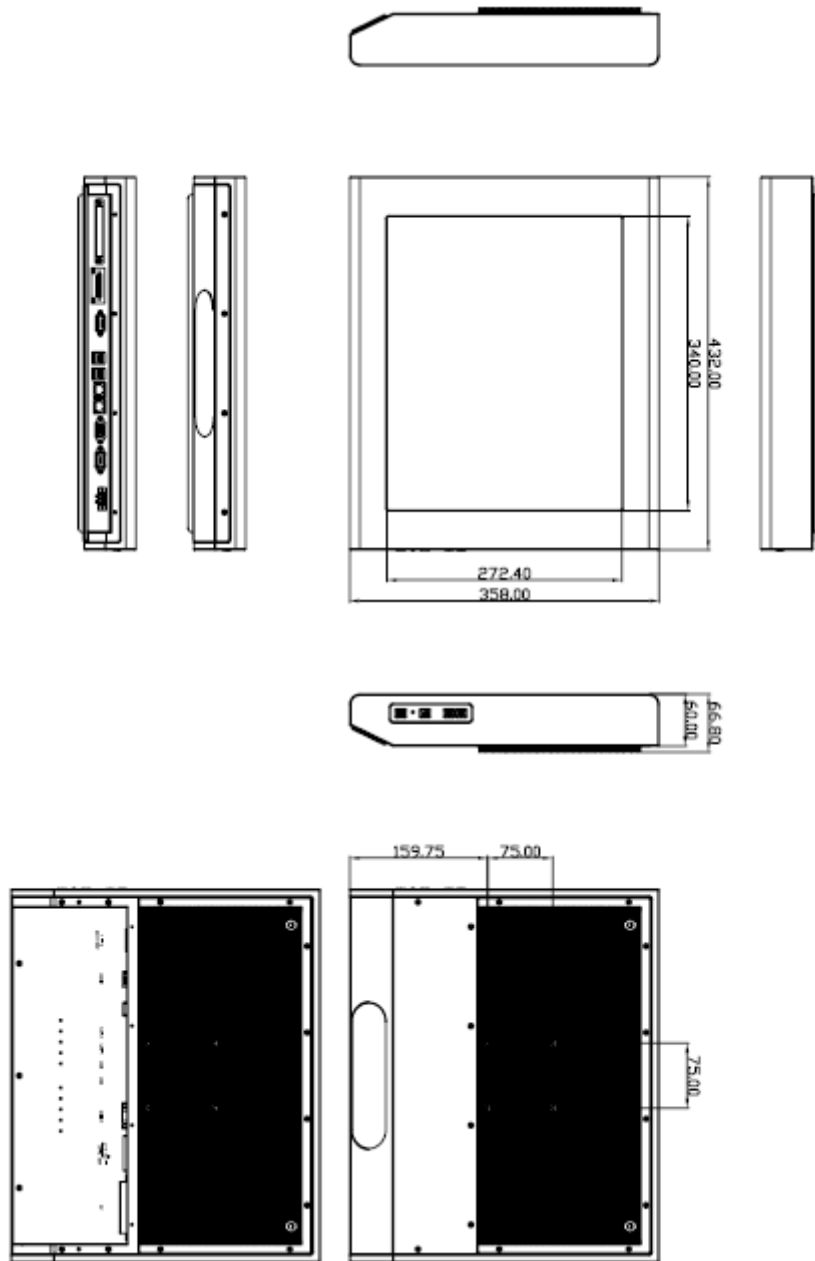


Figure 1.3: Dimensions of APC-3782/APC-3783

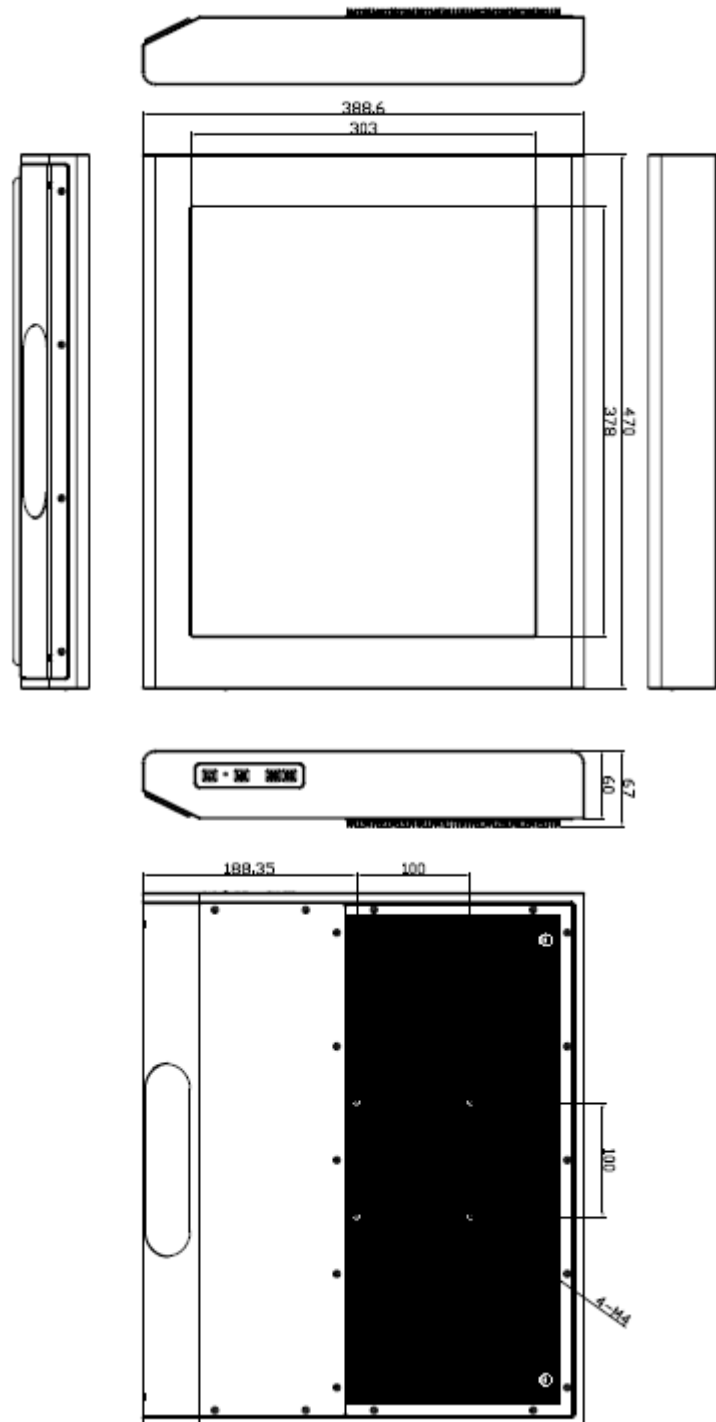


Figure 1.4: Dimensions of APC-3982/APC-3983

1.3 Brief Description of APC-3X82/3X83

The fanless APC-3X82/3X83 is Intel Atom D525 powered panel PC with a rich variety of functions and peripherals. APC-3X82/3X83 is designed for easy and simplified integration into various vehicle applications. It comes with a compact flash slot, 2.5-inch hard disk drive, DDR3 memory, audio jack, 2 Ethernet, DC input. 4 external USB ports ensure simplified connectivity to a variety of external peripheral devices. The unit supports Windows XP Pro, XP Embedded and Windows Embedded Standard 7. The fanless touch panel computer is ideal for use as Web Browser, Terminal and HMI at all levels of automation control.



Figure 1.5: Overview of APC-3X82



Figure 1.6: Overview of APC-3X83

Chapter 2 Hardware Installation

2.1 Mainboard Specifications



Figure 2.1: Mainboard Overview

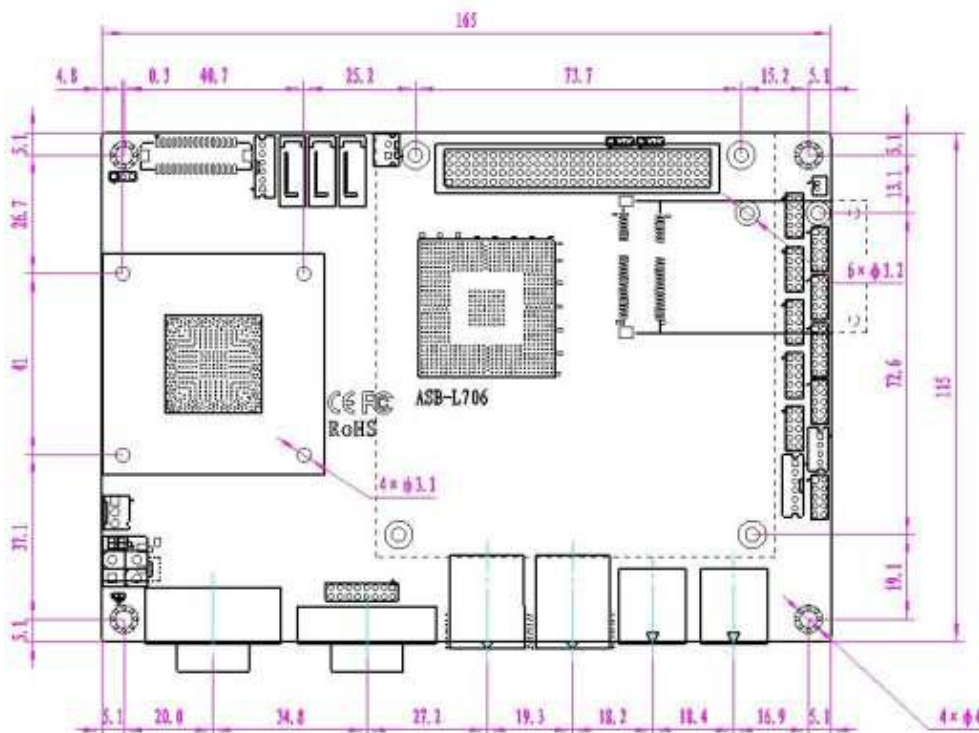


Figure 2.2: Mainboard Dimensions

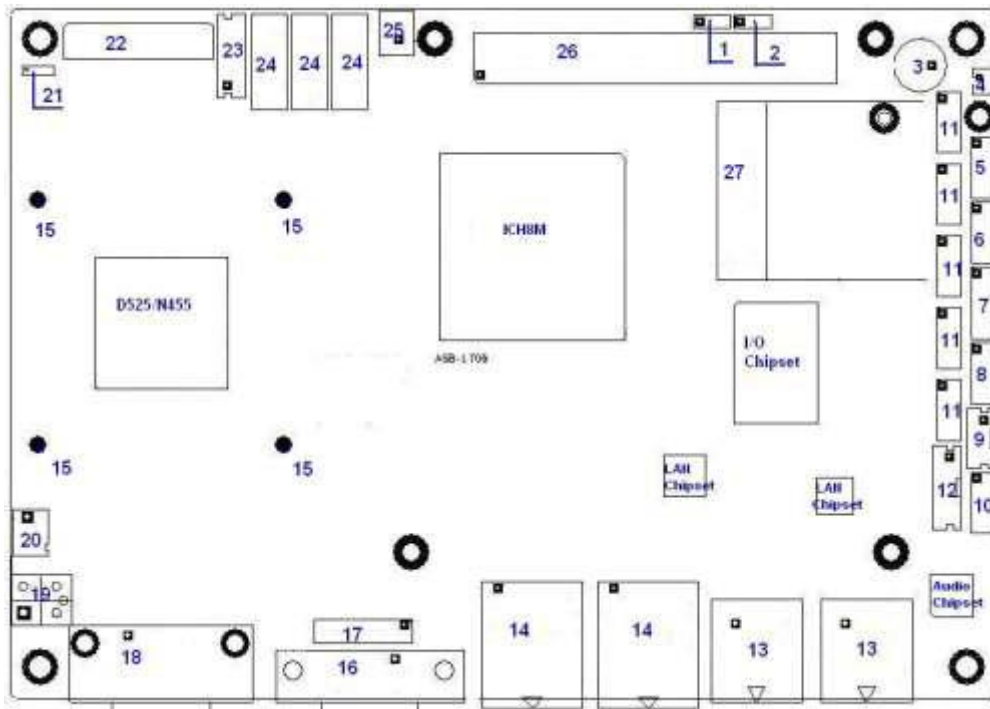


Figure 2.3: Jumpers and Connectors Location-TOP

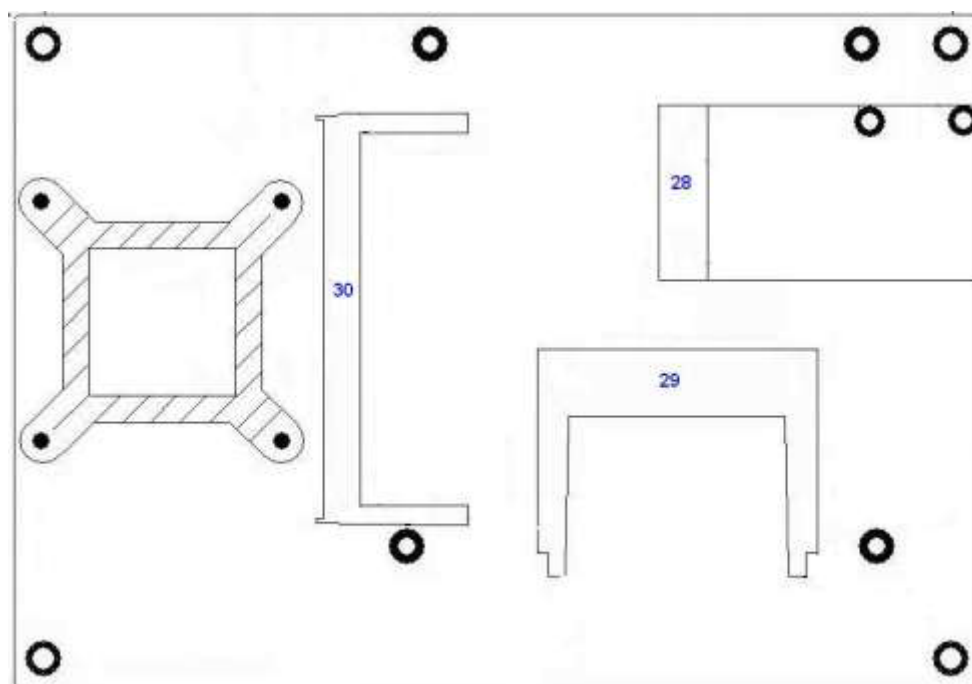


Figure 2.4: Jumpers and Connectors Location- Bottom

Specifications	
Board Size	165mm x 115mm
CPU Support	Intel Atom D525 /1.80GHz (onboard) Intel Atom N455 /1.66GHz (onboard option)
Chipset	Intel Atom D525 + Intel ICH8M Intel Atom N455 + Intel ICH8M (option) Intel Atom N455 + Intel ICH8M-E (option, Support RAID0/1)
Memory Support	1x SO-DIMM (204pins), up to 2GB DDR3 800MHz FSB
Graphics	Integrated by D525 / N455 GMA 3150
Super I/O	Winbond W83627UHG
BIOS	AMIBIOS
Storage	3 x SATA Connector 1 x Compact Flash II Slot (shared IDE)
Network	2 x RJ-45 1000Mbps LAN Intel 82574L
USB	4 x USB 2.0 stack port for external 2 x USB 2.0 internal Pin header 2 x USB 2.0 internal for mini PCIe
Serial	1 x RS232 port, DB9 connector for external (COM1), pin 9 w/5V/12V/Ring select 1 x RS232/422/485 select header for internal (COM3), default RS232 4 x RS232 (COM2,COM4,COM5,COM6), header internal
Digital I/O	8-bit digital I/O by Pin header 4-bit digital Input 4-bit digital Output
Battery	Support CR2477 Li battery by 2-pin header
Audio	Support Audio via Realtek ALC662 HD audio decoder Support Line-in, Line-out, MIC by 2x5-pin header
Keyboard /Mouse	1x PS2 keyboard/mouse by 1x6 box pin header
Expansion Bus	1x PC 104+ connector (PCI master 4, jumper for +3.3V & 5V select) 2x mini-PCI-express slot (1x full size, 1x half-size)
Power Management	DC12V input 1 x 2-pin power input connector

Front I/O	by 2x5-pin header Power on/off switch Reset switch Power LED status HDD LED status Buzzer
Watchdog Timer	Software programmable 1 – 255 second by Super I/O
External I/O port	1 x COM Port (COM1) 4 x USB 2.0 Ports (stack) 2 x RJ45 GbE Ports (10/100/1000Mbps) 1 x DB15 Port or 2x8 Pin Header
Temperature	Operating: -20°C–70°C Storage: -40°C–85°C
Humidity	5% - 95%, non-condensing, operating
Power Consumption	12V /1.6A (Intel D525 processor with 2GB DDR3 DRAM) 12V /1.3A (Intel N455 processor with 2GB DDR3 DRAM)
EMI/EMS	Meet CE/FCC class A

2.2 Jumpers Setting and Connectors

- 1. JCLR_CMOS:** (2.0mm Pitch 1x3 Pin Header) CMOS clear jumper, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

JCLR_CMOS	CMOS
CLOSE 1-2	NORMAL (default)
CLOSE 2-3	Clear CMOS



Procedures of CMOS clear:

- 5.4.1.1 Turn off the system and unplug the power cord from the power outlet.
- 5.4.1.2 To clear the CMOS settings, use the jumper cap to close pins 2 and 3 for about 3 seconds then reinstall the jumper clip back to pins 1 and 2.
- 5.4.1.3 Power on the system again.
- 5.4.1.4 When entering the POST screen, press the <F1> or key to enter CMOS Setup Utility to load optimal defaults.
- 5.4.1.5 After the above operations, save changes and exit BIOS Setup.

- 2. JVCCIO:** (2.0mm Pitch 1x3 Pin Header) PC104+ port voltage selection jumper, select voltage for PCI-104 Plus device. **The default for this jumper is “all open”, meaning the user must select the voltage to be used.**

JVCCIO	PC104+ VCCIO Voltage
CLOSE 1-2	+3.3V
CLOSE 2-3	+5V
all Open	(Default)

- 3. BZ:** onboard buzzer.

- 4. JCOM6:** (2.0mm Pitch 1x3 Pin Header) COM6 setting jumper, pin 1~3 are used to select signal out of pin 10 of COM6 port.

JP1 Pin#	Function
Close 1-2	COM6 Pin10=+5V (default)
Close 2-3	COM6 Pin10=+12V (option)

- 5. JP2:** (2.0mm Pitch 1X2 Pin Header), ATX Power and Power auto on setting jumper.

JP2	Mode
-----	------

Open	ATX Power Mode
Close	Power Auto on (Default)

6. BAT: (1.25mm Pitch 1x2 box Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VBAT
PIN2	Ground

7. F PANEL: (2.0mm Pitch 2X5 Pin Header), Front panel connector.

Signal Name	Pin#	Pin#	Signal Name
HD LED+	1	2	POWER LED+
HD LED-	3	4	POWER LED-
Ground	5	6	PWRBTN
RESET	7	8	Ground
BUZZER+	9	10	BUZZER-

Pin1-3: **HDD LED**, They are used to connect hard disk activity LED. The LED blinks when the hard disk is reading or writing data.

Pin2-4: **POWER LED**, They are used to connect power LED. When the system is powered on or under S0/S1 state, the LED is normally on; when the system is under S4/S5 state, the LED is off.

Pin5-6: **POWER on/off Button**, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

Pin7-8: **RESET Button**, They are used to connect reset button. The two pins are disconnected under normal condition. You may short them temporarily to realize system reset.

Pin9-10: **BUZZER**, They are used to connect an external buzzer.



Note:

When connecting LEDs and buzzer, pay special attention to the signal polarity. Make sure that the connector pins have a one-to-one correspondence with chassis wiring, or it may cause boot up failure.

- 8. USB3:** (2.0mm Pitch 2x5 Pin Header) ,Front USB connector, it provides two USB ports via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
+5V	1	2	+5V
USB_P6_DN	3	4	USB_P7_DN
USB_P6_DP	5	6	USB_P7_DP
Ground	7	8	Ground
NC	9	10	Ground



Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

- 9. JCOM:** (2.0mm Pitch 2x6 Pin Header) COM1 and COM3 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM1 port; pin 7~12 are used to select output type for COM3 port (RS232 Type or RS422 Type or RS485 Type).

JCOM Pin#	Function
CLOSE 1-2	COM1 Pin9=RI (default)
CLOSE 3-4	COM1 Pin9=+5V (option)
CLOSE 5-6	COM1 Pin9=+12V (option)
CLOSE 7-9	COM3 FOR RS232 FROM COM3 (default)
CLOSE 8-10	COM3 FOR RS485 FROM COM33 (option)
CLOSE 10-12	COM3 FOR RS422 FROM COM33 (option)



Note:

Since COM3 and COM33 use the same address, they cannot work at the same time.

- 10. GPIO:** (2.0mm Pitch 2x5 Pin Header),General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
GPIO20	1	2	GPIO60

GPIO21	3	4	GPIO61
GPIO22	5	6	GPIO62
GPIO23	7	8	GPIO63
Ground	9	10	+5V

11. COM3: (2.0mm Pitch 1x4 box Pin Header), it provides selectable RS422/RS485 serial signal output.

RS422 Type (option)		RS485 Type (option)	
Signal Name	Pin#	Pin#	Signal Name
422RXD-	1	1	NC
422RXD+	2	2	NC
422TXD-	3	3	485A-
422TXD+	4	4	485A+



Note:

Use COM3 RS232/RS485 Function, please setting JCOM Jumpers and BIOS CMOS Setup.

Path:

BIOS Setup Utility \ Advanced Setting \ SuperIO Configuration \ Serial Port3

Type:

[RS232 Type]

[RS485 Type]

12. F_AUDIO: (2.0mm Pitch 2x5 Pin Header), Front Audio, An onboard Realtek ALC662 codec is used to provide high-quality audio I/O ports. Line Out can be connected to a headphone or amplifier. Line In is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name
FRONT-OUT-L	1	2	LINEIN_R
AUD_AGND	3	4	AUD_AGND
FRONT-OUT-R	5	6	LINEIN_L
AUD_AGND	7	8	AUD_AGND
FRONT-MIC_L	9	10	FRONT-MIC_R

13. COM2-COM6: (2.0mm Pitch 2x5 Pin Header), COM2 COM3 COM4 COM5 COM6 Ports, up to 5 standard RS232 ports are provided. They can be used directly via COM cable connection.

COM2,COM3,COM4,COM5 Signal Name:			
Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

COM6 Signal Name:			
Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI	9	10	JCOM6 Setting: Pin1-2 : 5V (Default) Pin2-3:12V (option)



Note:

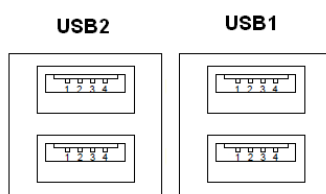
COM3 port is controlled by pins No.7~10 of JCOM. For details, please refer to description of JCOM and COM33 BIOS Setup.

14. KB/MS: (2.0mm Pitch 1x6 box Pin Header), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

15. USB1/2: (Double stack USB type A), Rear USB connector, it provides up to 4

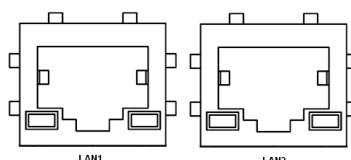
USB2.0 ports, speed up to 480Mb/s.



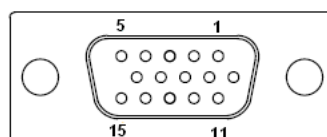
Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A.

If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

- 16. LAN1/2:** (RJ45 Connector)_Rear LAN port,2 standard 10/100/1000M RJ-45 Ethernet ports are provided. Used Intel 82567LM chipset ,LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



- 17. VGA:** (CRT Connector DB15),Video Graphic Array Port, provide high-quality video output. **They can not work at the same time for VGA and VGA-PH.**

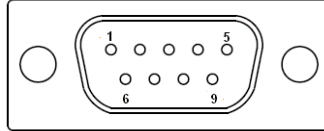


- 18. VGA-PH:** (CRT 2.0mm Pitch 2x8 Pin Header), Video Graphic Array Port, Provide 2x8 Pin cable to VGA Port, **they can not work at the same time for VGA and VGA-PH.**

Signal Name	Pin#	Pin#	Signal Name
CRT_RED	1	2	Ground
CRT_GREEN	3	4	Ground
CRT_BLUE	5	6	NC
CRT_R_HSYN C	7	8	CRT_PU_DDC_DAT
CRT_R_VSYN C	9	10	CRT_PU_DDC_CLK
NC	11	12	NC
+12V	13	14	Ground
+12V	15	16	Ground

19. CPU SCREW HOLES: Four screw holes for fixed CPU Cooler assemble.

20. COM1: (Type DB9), Rear serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM1 port is controlled by pins No.1~6 of **JCOM**, select output Signal RI or 5V or 12v, For details, please refer to description of JCOM.



21. AT12V: (5.0mm 1x2 Pin Connector), DC12V System power input connector °

Pin#	Signal Name
1	+12V
2	Ground



Note:

Make sure that the voltage of power supply is DC(12±5%)V before power on, or it may cause boot up failure and even system damage.

22. FAN: (2.54mm Pitch 1x3 Pin Header), Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.

Pin#	Signal Name
1	Ground
2	VCC
3	Rotation detection



Note:

Output power of cooling fan must be limited under 5W.

23. LVDS: For 18 bit LVDS output connector, Fully supported by Intel Atom D525 chipset, the interface features single channel 18-bit output. Model name of the interface connector is Hirose DF13-30DP-1.25V.

Signal Name	Pin#	Pin#	Signal Name
LVDS1_VDD5	1	2	LVDS1_VDD5
Ground	3	4	Ground

LVDS1_VDD3 3	5	6	LVDS1_VDD3 3
LADATAN0	7	8	NC
LADATAP0	9	10	NC
LADATAN1	11	12	NC
LADATAP1	13	14	NC
LADATAN2	15	16	NC
LADATAP2	17	18	NC
LACLKN	19	20	NC
LACLKP	21	22	NC
LDDC_CLK	23	24	NC
LBKLT_EN	25	26	BKLT_CTRL
Ground	27	28	Ground
+V12S	29	30	+V12S

24. BKL: (2.0mm Pitch 1x5 box Pin Header), Backlight control connector for LVDS1.

Pin#	Signal Name
1	+DC12V
2	+DC12V
3	Ground
4	Ground
5	BKLT_EN
6	BKLT_CTRL

25. SATA1/2/3: (SATA 7P),SATA1,SATA2,SATA3 SATA Connectors. Three SATA connectors are provided, with transfer speed up to 3.0Gb/s.

ASB-L706NE: SATA1/SATA2/SATA3 drives supporting RAID 0 or RAID 1 function

26. SATA P2: (2.5mm Pitch 1x4 box Pin Header), onboard 5V and 12V output connector is reserved to provide power for SATA devices.

Pin#	Signal Name
1	+DC5V
2	Ground
3	Ground
4	+DC12V



Note:

Output current of the connector must not be above 1A.

27. CN1: (2.5mm Pitch 1x2 box Pin Header), an onboard 5V output connector is reserved to provide power for IDE/SATA devices.

Pin#	Signal Name
1	+DC5V
2	Ground



Note:

Output current of the connector must not be above 1A.

28. PC104+: (4x30 Pin), PC104 plus connector, it conforms to standard PC104+ specification.

29. MPCIE2: (30mmx30mm Socket 52Pin), mini PCIE socket, it is located at the top, it supports mini PCI-E devices with USB2.0, SMBUS and PCI-E signal.

30. MPCIE2 SCREW HOLES: one screw holes for fixed MPCIE2 assemble.

31. MPCIE: (50.95x30mm socket 52Pin), mini PCIE socket, it is located at the bottom, it supports mini PCI-E devices with USB2.0, SMBUS and PCI-E signal.

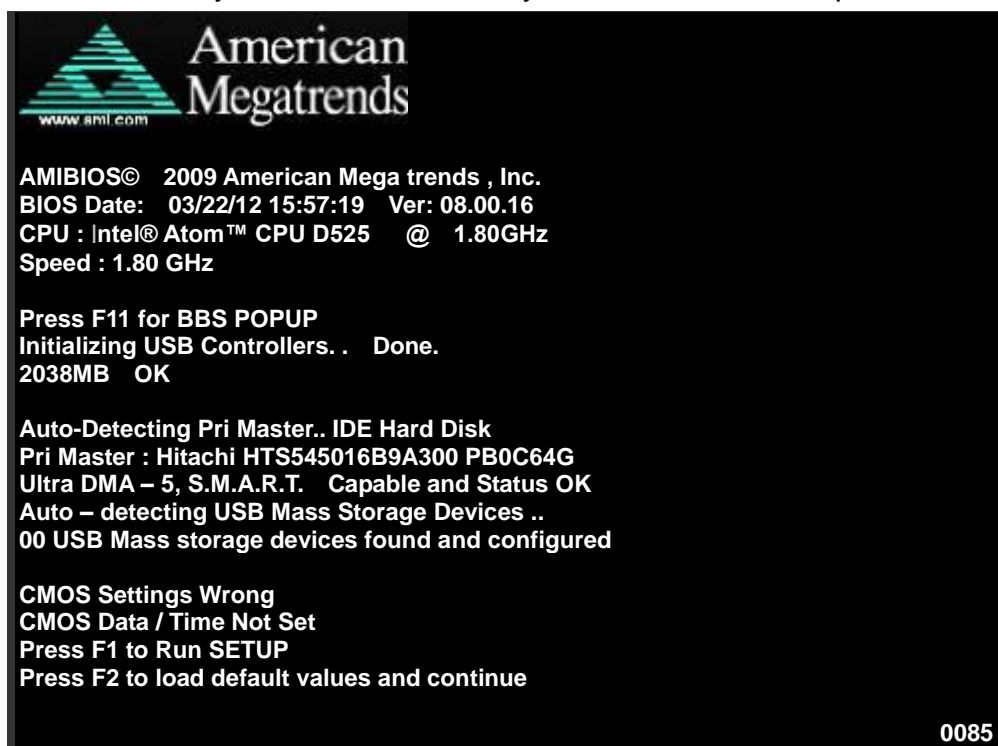
32. CF: CF_Card socket, it is located at the bottom of the board and serves as an insert interface for Type I and Type II Compact Flash card. The operating voltage of CF card can be set as 3.3V or 5V. **The default setting of the product is 5V.**

33. DDR3: (SO-DIMM 204Pin socket), DDRIII memory socket, the socket is located at the bottom of the board and supports 204Pin 1.5V DDRIII 800MHz FSB SO-DIMM memory module up to 2G.

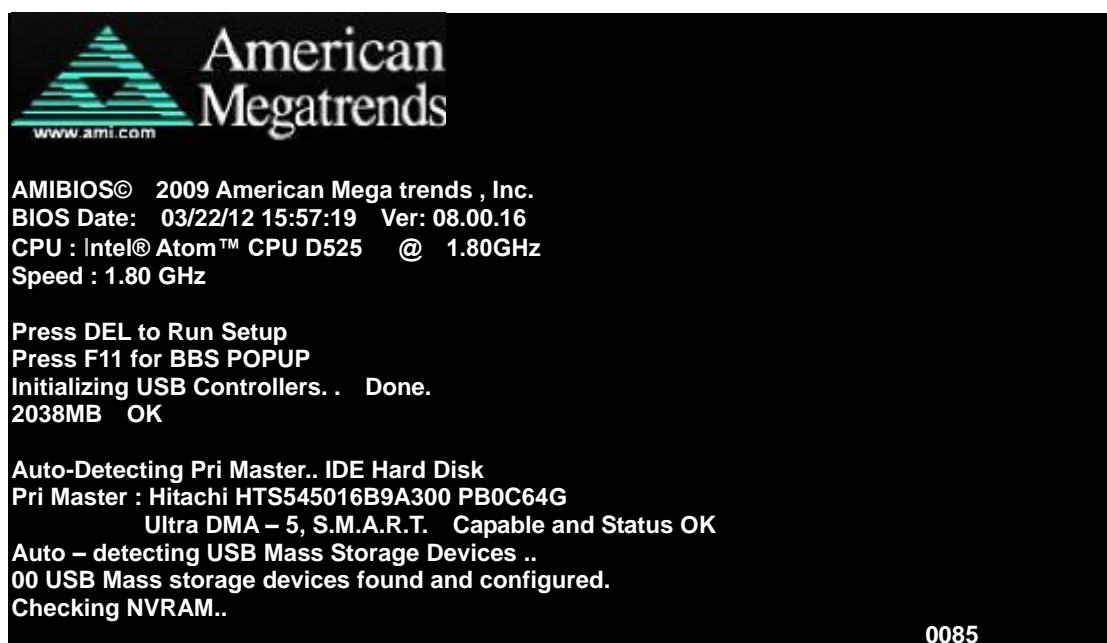
34. MPCIE SCREW HOLES: one screw holes for fixed MPCIE assemble.

3.1 Operations after POST Screen

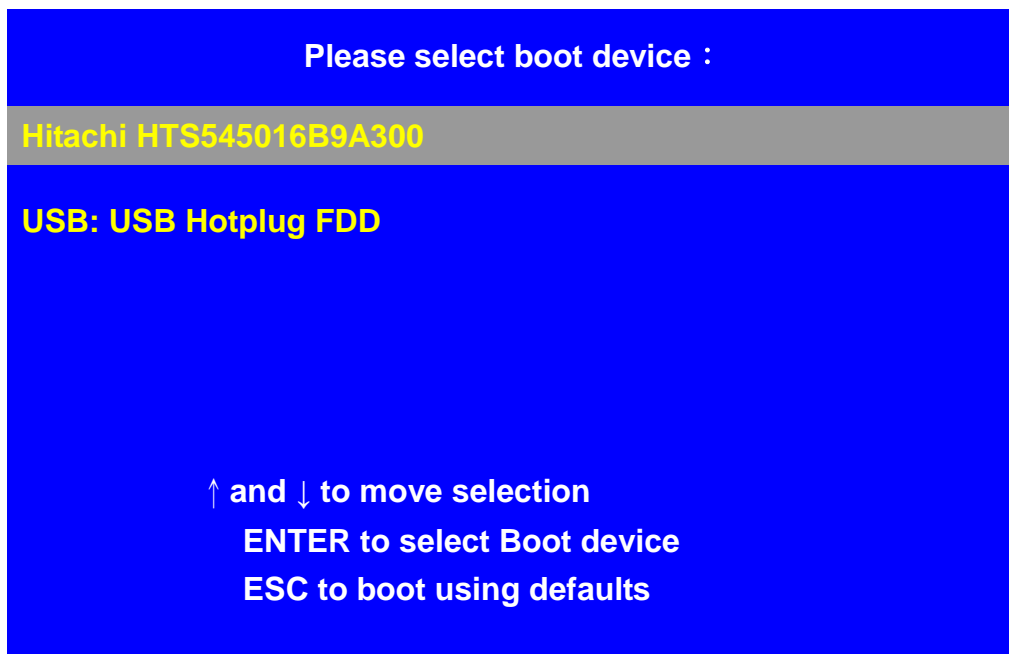
After CMOS discharge or BIOS flashing operation, the system will display the following screen for your further operation. Press F2 key to continue or F1 key to enter CMOS Setup.



After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.



Press **F11** key to enter Boot Menu during POST, as shown by the following figure.



3.2 BIOS SETUP UTILITY

Press [Del] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

BIOS SETUP UTILITY	
Main	Advanced PCIPnP Boot Security Chipset Exit
System Overview	User [ENTER] , [TAB] or [SHIFT-TAB] to Select a field
AMIBIOS	
Version : 08.00.16	
Build Date : 03/22/12	
ID : L706V012	Use[+] or [-] to configure system Time.
Processor	
Intel ® Atom™ CPU D525 @ 1.80GHz	
Speed :1800MHz	← Select Screen
Count :2	↑↓ Select Item
System Memory	+ - Charge Field
Size :2038MB	Tab Select Field
System Time	F1 General Help
[00:00:10]	F10 Save and Exit

System Date 01/01/2002]	[Tue ESC Exit
V02.68 © Copyright 1985-2009 American Mega trends , Inc.	

3.3 System Overview

BIOS SETUP UTILITY	
Main	Advanced PCI PnP Boot Security Chipset Exit
System Overview	User [ENTER] , [TAB] or [SHIFT-TAB] to Select a field Use[+] or [-] to configure system Time.
AMIBIOS Version : 08.00.16 Build Date : 03/22/12 ID : L706V012	
Processor Intel ® Atom™ CPU D525 @ 1.80GHz Speed :1800MHz Count :2	← Select Screen ↑↓ Select Item +- Charge Field
System Memory Size :2038MB	Tab Select Field
System Time [00:06:31]	F1 General Help
System Date [Tue 01/01/2002]	F10 Save and Exit
	ESC Exit
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System Time:

Set the system time, the time format is:

Hour : 0 to 23
Minute : 0 to 59
Second : 0 to 59

System Date:

Set the system date, the date format is:

Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 2010 to 2099

3.4 Advanced Settings

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced Settings		Configure CPU				
WARNING: Setting wrong values In below sections may cause system to malfunction.						
<ul style="list-style-type: none">▶ CPU Configuration▶ IDE Configuration▶ Super IO Configuration▶ Hardware Health Configuration▶ ACPI Configuration▶ AHCI Configuration▶ ASF Configuration▶ MPS Configuration▶ PCI Express Configuration▶ Smbios Configuration▶ USB Configuration		<ul style="list-style-type: none">← Select Screen↑↓ Select ItemEnter Charge FieldF1 General HelpF10 Save and ExitESC Exit				
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3.4.1 CPU Configuration

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced Settings		Configure CPU				
WARNING: Setting wrong values In below sections may cause system to malfunction.						
<ul style="list-style-type: none">▶ CPU Configuration▶ IDE Configuration▶ Super IO Configuration▶ Hardware Health Configuration▶ ACPI Configuration▶ AHCI Configuration▶ ASF Configuration▶ MPS Configuration▶ PCI Express Configuration		<ul style="list-style-type: none">← Select Screen↑↓ Select ItemEnter Charge FieldF1 General HelpF10 Save and Exit				

<ul style="list-style-type: none"> ▶ Smbios Configuration ▶ USB Configuration 	ESC Exit
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3.4.2 IDE Configuration

BIOS SETUP UTILITY		
Advanced		
IDE Configuration		Options
ATA/IDE Configuration	[Enhanced]	Disabled
Configure SATA as	[IDE]	Enhanced
▶ Primary IDE Master	: [Not Detected]	
▶ Primary IDE Slaver	: [Not Detected]	
▶ Secondary IDE Master	: [Not Detected]	
▶ Secondary IDE Slaver	: [Not Detected]	← Select Screen
▶ Third IDE Master	: [Not Detected]	↑↓ Select Item
▶ Third IDE Slaver	: [Not Detected]	+ - Charge Field
▶ Fourth IDE Master	: [Not Detected]	F1 General Help
▶ Fourth IDE Slaver	: [Not Detected]	F10 Save and Exit
Hard Disk Write Protect	[Disabled]	ESC Exit
IDE Detect Time Out (Sec)	[35]	
ATA(Pi) 80Pin Cable Detection	[Host & Device]	
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ATA/IDE Configuration:

[Enhanced]

[Disabled]

Configure SATA as:

[IDE]
[RAID]
[AHCI]

Hard Disk Write Protect:

[Disabled]
[Enabled]

IDE Detect Time Out :

[35]
Options: [0,5,10,15,20,25,30,35]

ATA(PI) 80Pin Cable Detection:

[Host & Device]
[Host]
[Device]

3.4.3 Super IO Configuration

BIOS SETUP UTILITY		
Advanced		
Configure Win627UHG Super IO Chipset		Allow BIOS to Select
Serial Port1 Address	[3F8]	Serial Port Base
Serial Port1 IRQ	[IRQ4]	Address.
Serial Port2 Address	[2F8]	
Serial Port2 IRQ	[IRQ3]	
Serial Port3 Address	[3E8]	
Serial Port3 IRQ	[IRQ5]	
Serial Port3 Type	[RS232	
Type]		
Serial Port4 Address	[2E8]	← Select Screen
Serial Port4 IRQ	[IRQ6]	↑↓ Select Item
Serial Port5 Address	[2F0]	+ - Charge Field
Serial Port5 IRQ	[IRQ10]	F1 General Help
Serial Port6 Address	[2E0]	F10 Save and Exit
Serial Port6 IRQ	[IRQ11]	ESC Exit
WatchDog Setting	[Disable]	
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Serial Port3 Type:

COM3 Options:

[RS232 Type]

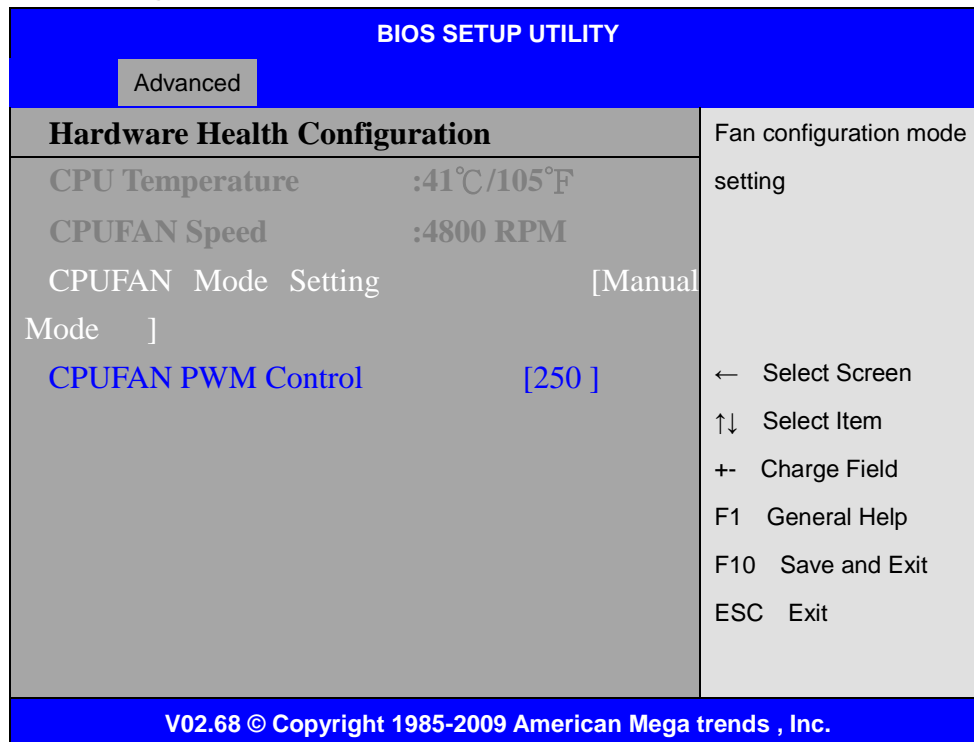
[RS485 Type]

WatchDog Setting:

[Disable]

Options: [10sec,20sec,30sec,40sec,1min,2min,4min]

3.4.4 Hardware Health Configuration



CPU Temperature:

Show you the current CPU temperature.

CPUFAN Speed:

Show you the current CPU Fan operating speed.

CPUFAN Mode Setting:

[Manual Mode]

[Thermal Cruise Mode]

[Speed Cruise Mode]

[Smart Fan3 Mode]

3.4.5 ACPI Configuration

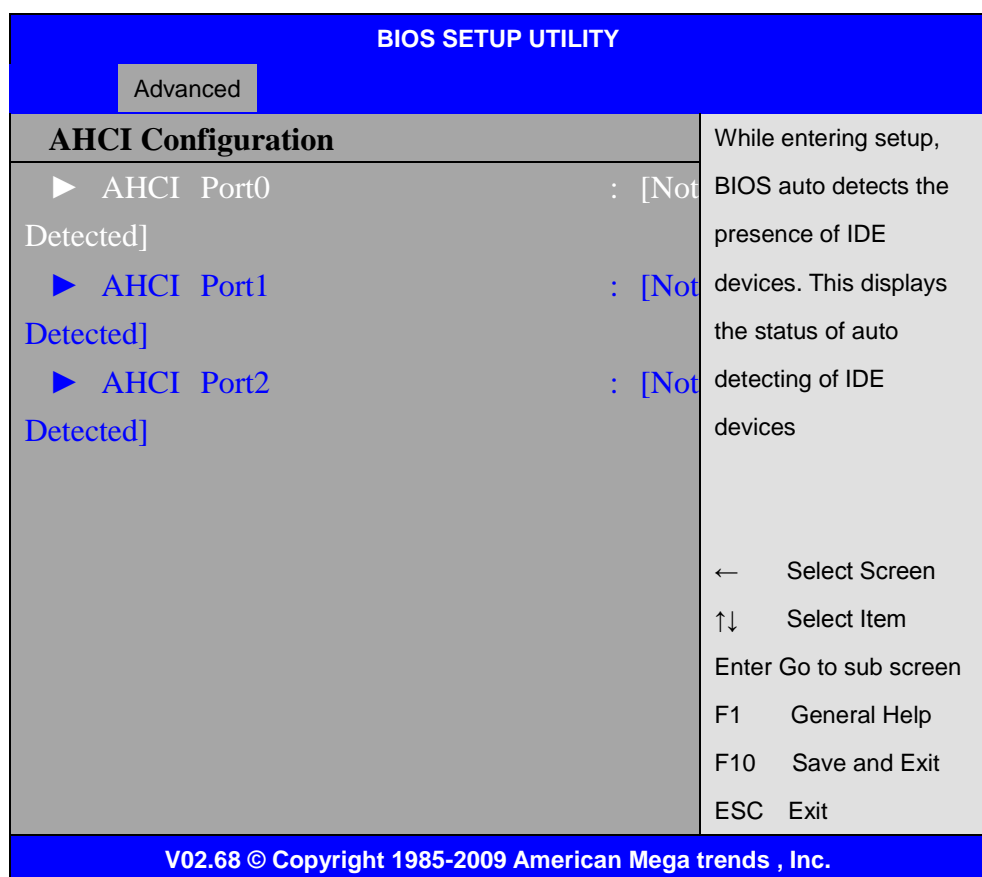
Section for Advanced ACPI Configuration

Options:

[Advanced ACPI Configuration]

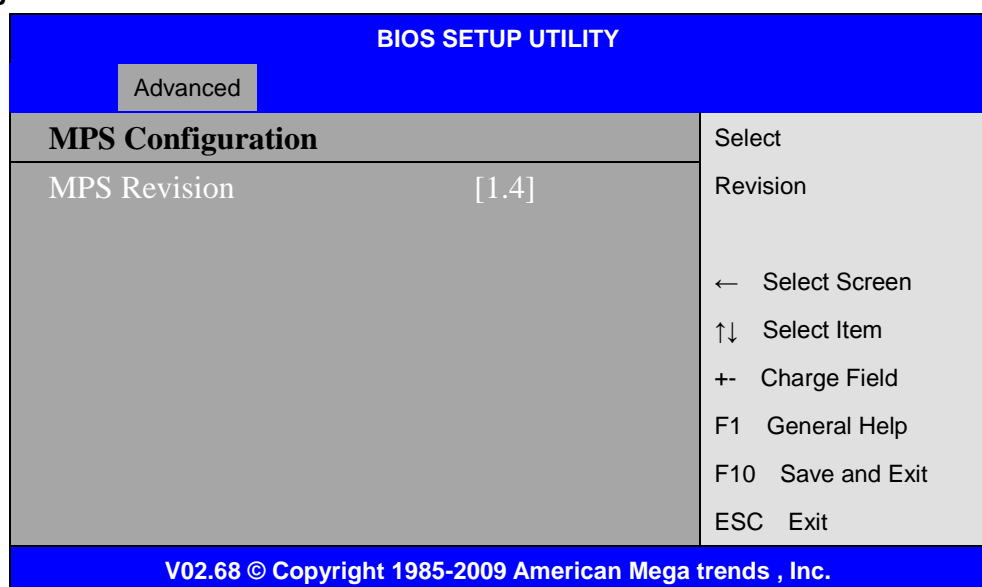
[Chipset ACPI Configuration]

3.4.6 AHCI Configuration



While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detecting of IDE devices

3.4.7 MPS Configuration



Configure the Multi-Processor Table.

MPS Revision:

[1.4]

3.4.8 PCI Express Configuration

BIOS SETUP UTILITY		
Advanced		
PCI Express Configuration		Enables/Disables
Relaxed Ordering	[Auto]	PCI Express Device
Maximum Payload Size	[Auto]	Relaxed Ordering
Extended Tag Field	[Auto]	
No Snoop	[Auto]	
Maximum Read Request Size	[Auto]	← Select Screen
Active State Power Management	[Disabled]	↑↓ Select Item
Extended Synch	[Auto]	+− Charge Field
		F1 General Help
		F10 Save and Exit
		ESC Exit
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Relaxed Ordering:

[Auto]

[Disabled]

[Enable]

Maximum Payload Size:

[Auto]

[128/256/512/1024/2048/4096 Bytes]

Set Maximum Payload of allow System BIOS select the value.

Extended Tag Field:

[Auto]

[Disabled]

[Enable]

No Snoop:

[Auto]

[Disabled]

[Enable]

Maximum Read Request Size:

[Auto]

[128/256/512/1024/2048/4096 Bytes]

Set Maximum Read Request Size of PCI Express Device or allow System BIOS select the value.

Active State Power Management:

[Disabled]

[Enable]

Extended Synch:

[Auto]

[Disabled]

[Enable]

3.4.9 Smbios Configuration

BIOS SETUP UTILITY	
Advanced	
Smbios Configuration	SMBIOS SMI Wrapper
Smbios Smi Support [Enabled]	Support for PnP Func 50h-54h
<div>← Select Screen</div> <div>↑↓ Select Item</div> <div>+ - Charge Field</div> <div>F1 General Help</div> <div>F10 Save and Exit</div> <div>ESC Exit</div>	
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Smbios Smi Support:

[Enable]

[Disabled]

3.4.10 USB Configuration

BIOS SETUP UTILITY	
Advanced	

USB Configuration		Enables support for
Module Version – 2.24.5-14.4		legacy USB.ATUO
USB Devices Enabled :		option disables legacy
None		support if no USB
Legacy USB Support	[Enabled]	devices are connected
USB2.0 Controller Mode	[Hispeed]	
BIOS EHCI Hand-Off	[Enabled]	← Select Screen
Hotplug USB FDD Support	[Auto]	↑↓ Select Item
▶ USB Mass Storage Device Configuration		+– Charge Field
		F1 General Help
		F10 Save and Exit
		ESC Exit
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Legacy USB Support:

[Enable]
[Disabled]

USB2.0 Controller Mode:

[HiSpeed]
[FullSpeed]

BIOS EHCI Hand-Off:

[Enable]
[Disabled]

Hotplug USB FDD Support:

[Auto]
[Disabled]
[Enable]

USB Mass Storage Device Configuration:

BIOS SETUP UTILITY

Advanced		
USB Mass Storage Device Configuration		Number of seconds
USB Mass Storage Reset Delay	[20 Sec]	POST waits for the USB mass storage device after start unit command
Device #1 USB Hotplug		
Emulation Type	[Auto]	← Select Screen ↑↓ Select Item +- Charge Field F1 General Help F10 Save and Exit ESC Exit
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3.5 Advanced PCI/PnP Settings

This part describes configurations to be made on PCI bus system. PCI, namely Personal Computer Interconnect, is a computer bus that allows I/O device to operate nearly as fast as CPU in its own way. Some technical terms will be mentioned here. **We recommend that non-professional users not make changes from factory default settings.**

BIOS SETUP UTILITY		
Main	Advanced	PCIPNP
Advanced PCI/PnP Settings		Clear NURAM during System Boot
WARNING: Setting wrong values In below sections may cause system to malfunction.		
Clear NVRAM	[No]	
Plug & Play O/S	[No]	
PCI Latency Timer	[64]	
Allocate IRQ to PCI VGA	[Yes]	
Palette Snooping	[Disabled]	
PCI IDE BusMaster	[Enabled]	
OffBoard PCI/ISA IDE Card	[Auto]	← Select Screen ↑↓ Select Item +- Charge Field F1 General Help
IRQ3		
[Available]		

IRQ4 [Available]	F10 Save and Exit
IRQ5 [Available]	ESC Exit
IRQ6 [Available]	
IRQ7 [Available]	
IRQ9 [Available]	
IRQ10 [Available]	
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Clear NVRAM:

[No]
[Yes]

Plug & Play OS:

[No]
[Yes]

PCI Latency Timer:

[64]
[32]
[96]
[128]
[160]
[192]
[224]
[248]

Allocate IRQ to PCI/VGA:

[Yes]
[No]

Palette Snooping:

[Disabled]
[Enable]

PCI IDE BusMaster:

[Disabled]

[Enable]

OffBoard PCI/ISA IDE Card:

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card. Auto:Works for most PCI IDE Cards.

[Auto]

[PCI Slot1]

[PCI Slot2]

[PCI Slot3]

[PCI Slot4]

[PCI Slot5]

[PCI Slot6]

IRQ3/4/5/7/9/10/11/14/15:

[Available]

[Reserved]

Available: Specified IRQ is available to be used by PCI/PnP devices.

Reserved: Specified IRQ is reserved for use by legacy ISA devices.

DMA Channel 0/1/3/5/6/7:

[Available]

[Reserved]

Available: Specified DMA is available to be used by PCI/PnP devices.

Reserved: Specified DMA is reserved for use by legacy ISA devices.

Reserved Memory Size:

Size of memory block to reserve for legacy ISA devices.

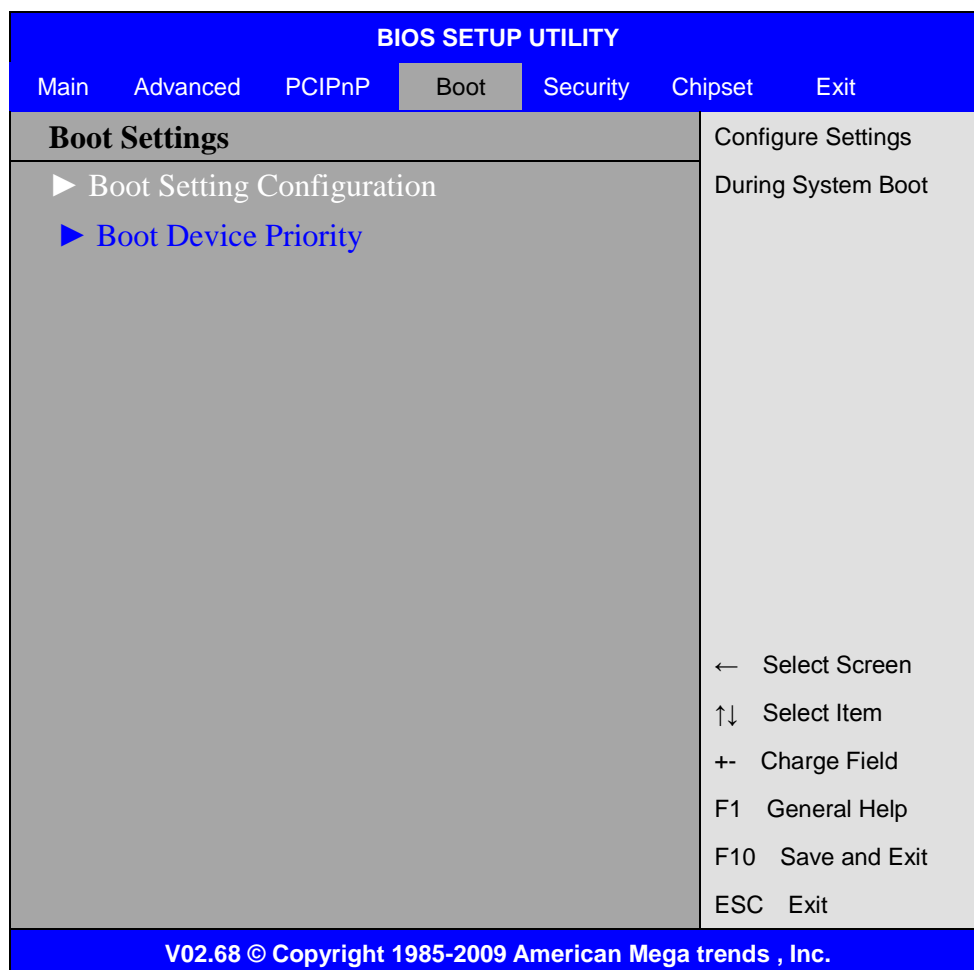
[Disabled]

[16k]

[32k]

[64k]

3.6 Boot Settings



Boot Setting Configuration :

Quick Boot:

[Enabled]

[Disabled]

Allows BIOS to skip certain tests while booting .This will decrease the time needed to boot the system.

Quiet Boot:

[Disabled]

[Enabled]

Disabled: Displays normal POST messages.

Enabled: Displays OEM logo instead of POST messages.

AddOn ROM Display Mode:

Set display mode for Option ROM.

[Force BIOS]
[Keep Current]

Bootup Num — Lock:

Select Power-on state for Numlock.

[On]
[Off]

PS/2 Mouse Support,:

Select support for PS/2 Mouse.

[Auto]
[Enabled]
[Disabled]

Wait For 'F1' If Error:

Wait for F1 key to be pressed if error occurs.

[Enabled]
[Disabled]

Hit 'DEL' Messgae Display :

Displays "press" DEL to run Setup in POST.

[Enabled]
[Disabled]

Interrupt 19 Capture:

[Disabled]
[Enabled]

Enabled: Allows option ROMs to trap interrupt 19.

Boot Device Priority:

Specifies the Boot Device Priority sequence.

3.7 Security Settings

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Security Settings				Install or Change the password.		
Supervisor Password :Not Installed						
User Password :Not Installed						
Change Supervisor Password						
Change User Password						
Boot Sector Virus Protection [Disabled]						
				← Select Screen ↑↓ Select Item Enter Charge F1 General Help F10 Save and Exit ESC Exit		
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Change Supervisor Password:
Install or Change the password.

Change User Password:
Install or Change the password.

Password Check:

[Setup]
[Always]

Setup: Check password while invoking setup.
Always: Check password while invoking setup a well as on each boot.

Boot Sector Virus Protection:

[Disabled]
[Enabled]

Enabled / Disabled Boot Sector Virus Protection.

Type the password with up to 6 characters and then press <Enter> key. This will clear all previously typed CMOS passwords. You will be requested to confirm the

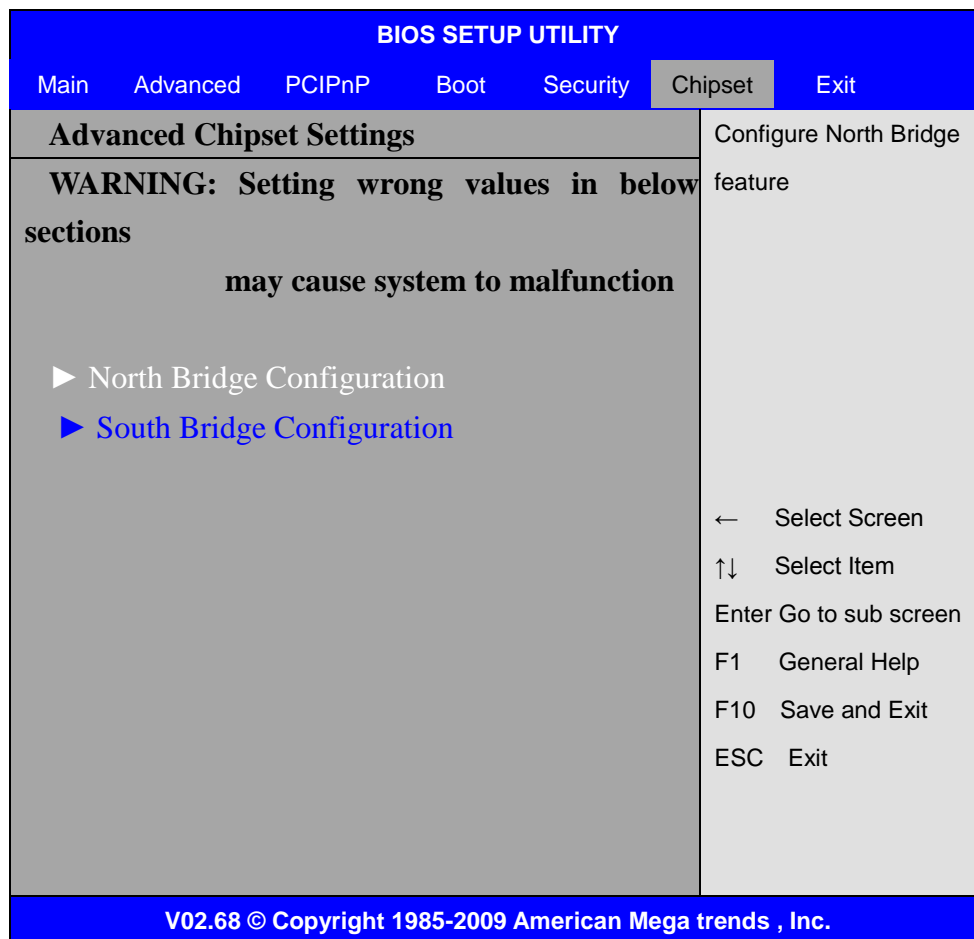
password. Type the password again and press <Enter> key. You may press <Esc> key to abandon password entry operation.

To clear the password, just press <Enter> key when password input window pops up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.8 Advanced Chipset Settings



Note: Due to limited address length of BIOS, only a portion of panel parameters are listed in

BIOS Setup. If the connected panel is not included in the parameter list, display problem will occur. In this case, Please do not change BIOS setup.

3.8.1 North Bridge Configuration

BIOS SETUP UTILITY	
Chipset	
North Bridge Chipset Configuration	Options
PCI MMIO Allocation: 4Gb To 3072MB	Auto
DRAM Frequency [Auto]	Max MHz
Configure DRAM Timing by SPD [Enabled]	
Initate Graphic Adapter [IGD]	
Internal Graphics Mode Select [Enable,8MB]	← Select Screen
	↑↓ Select Item
	+ - Charge Field
PEG Port Configuration	F1 General Help
	F10 Save and Exit
▶ Video Function Configuration	ESC Exit
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DRAM Frequency:

[Auto]

[Max MHz]

Configure DRAM Timing By SPD:

[Enabled]

[Disabled]

Initate Graphic Adapter:

Select which graphics controller to use as the primary boot device.

[IGD]

[PCI/IGD]

[PCI/PEG]

[PEG/IGD]

[PCIE/PCI]

Internal Graphics Mode Select:

[Enabled, 8MB]

Video Function Configuration:

BIOS SETUP UTILITY		
		Chipset
Video Function Configuration		Options
DVMT Mode Select	[DVMT Mode]	Fixed Mode DVMT Mode
DVMT/FIXED	Memory	
[256MB]		
Boot	Display	Device
[VBIOS-Default]		
Flat	Panel	Type
[1024x768LVDS]		
Panel Backlight Control	[Level 9]	
HDCP	Support	
Disabled]		
		← Select Screen ↑↓ Select Item +- Charge option F1 General Help F10 Save and Exit ESC Exit
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DVMT Mode Select:

[DVMT Mode]

[FIXED Mode]

DVMT/FIXED Memory Size:

[256MB]
 [128MB]
 [Maximum DVMT]

Boot Display Device:

[VBIOS-Default]
 [CRT]
 [LVDS]
 [CRT + LVDS]

Flat Panel Type:

[1024x 768LVDS]
 [640x480LVDS]
 [800x600LVDS]
 [1280x1024LVDS]
 [1366x768LVDS]

Panel Backlight Control:

[Level9]
 [Level0~15]



Note: Panel support PWM Function.

3.8.2 South Bridge Configuration:

BIOS SETUP UTILITY				
Chipset				
North Bridge Chipset Configuration			Options	
PCI MMIO Allocation: 4Gb To 3072MB			Auto	
DRAM Frequency			[Auto]	
Configure DRAM Timing by SPD			[Enabled]	
Initate Graphic Adapter			[IGD]	
Internal Graphics Mode			Select	
[Enable,8MB]			← Select Screen	
PEG Port Configuration			↑↓ Select Item	
			+- Charge Field	
			F1 General Help	

▶ Video Function Configuration	F10 Save and Exit ESC Exit
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DRAM Frequency:

[Auto]
[Max MHz]

Configure DRAM Timing By SPD:

[Enabled]
[Disabled]

Initate Graphic Adapter:

Select which graphics controller to use as the primary boot device.

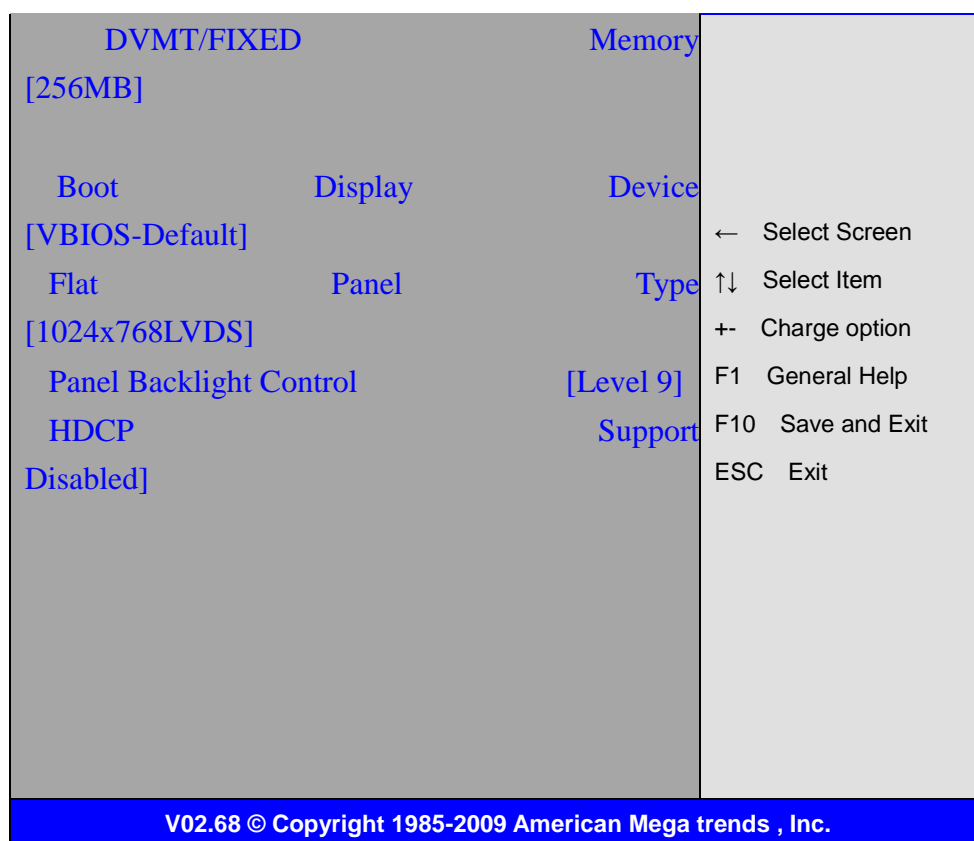
[IGD]
[PCI/IGD]
[PCI/PEG]
[PEG/IGD]
[PCIE/PCI]

Internal Graphics Mode Select:

[Enabled, 8MB]

Video Function Configuration:

BIOS SETUP UTILITY	
	Chipset
Video Function Configuration	Options
DVMT Mode Select [DVMT Mode]	Fixed Mode DVMT Mode



DVMT Mode Select:

[DVMT Mode]

[FIXED Mode]

DVMT/FIXED Memory Size:

[256MB]

[128MB]

[Maximum DVMT]

Boot Display Device:

[VBIOS-Default]

[CRT]

[LVDS]

[CRT + LVDS]

Flat Panel Type:

[1024x 768LVDS]

[640x480LVDS]

[800x600LVDS]

[1280x1024LVDS]

[1366x768LVDS]

Panel Backlight Control:

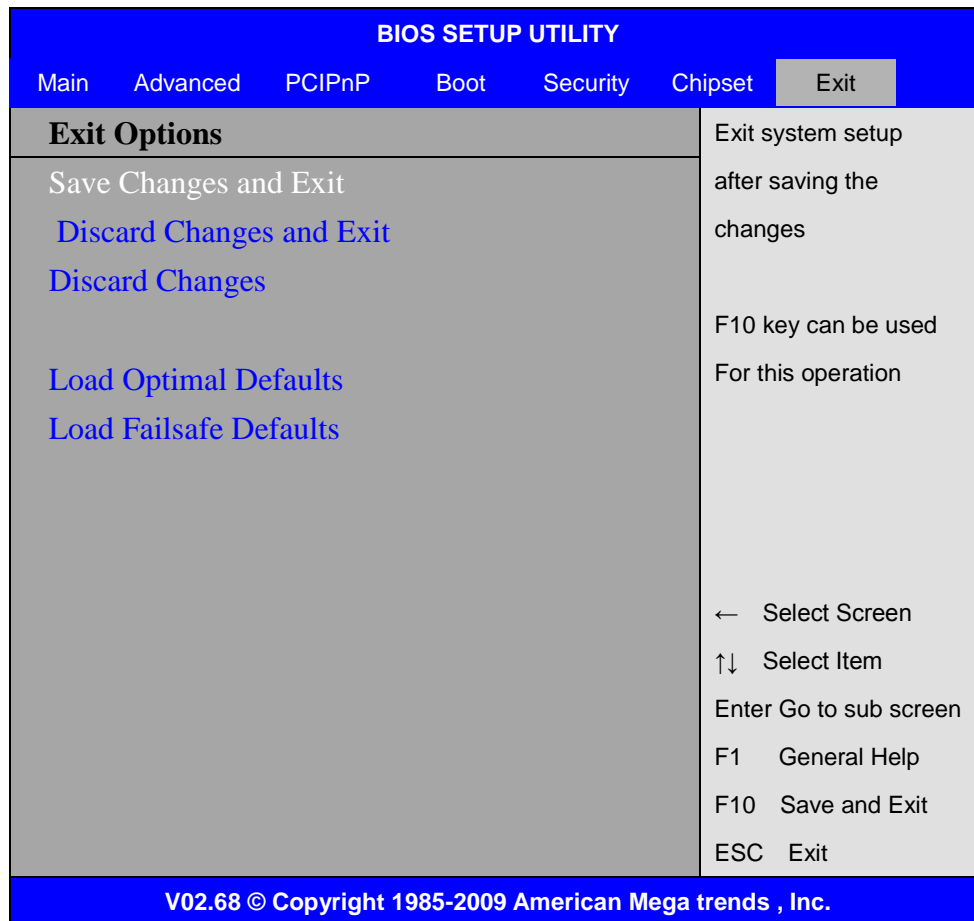
[Level9]

[Level0~15]



Note: Panel support PWM Function.

3.9 Exit Options



Save Changes and Exit:

Save configuration changes and exit setup?

(F10 key can be used for this operation)

[OK]

[Cancel]

Discard Changes and Exit:

Discard Changes and Exit setup?

(ESC key can be used for this operation)

[OK]

[Cancel]

Discard Changes:

Discard changes?

(F7 key can be used for this operation)

[OK]

[Cancel]

Load Optimized Defaults:

Load Optimized Defaults?

(F9 key can be used for this operation)

[OK]

[Cancel]

Load Fail-Safe Defaults:

Load Fail-Safe Defaults?

(F9 key can be used for this operation)

[OK]

[Cancel]

3.10 Examples of GPIO Programming

3.10.1 SuperIO Model: Winbond W83627UHG

- GPIO OUT use GP 60~63
- GPIO IN use GP 20~23

3.10.2 W83627UHG Access index port: 4Eh/4Fh

- Index Address Port: 4Eh
- Index Data Port: 4Fh

3.10.3 Configure GPIO register sequence

1. Enter the extended function mode
2. Select logic device number 8
3. Activate the logic device GPIO Port 6
4. Configure GPIO Port 6 register
5. Select logic device number 9
6. Activate the logic device GPIO Port 2
7. Configure GPIO Port 2 register
8. Exit the extended function mode

3.10.4 Read/write GPIO sequence

1. Enter the extended function mode
2. Select logic device number
3. Read/write GPIO register value
4. Exit the extended function mode

3.10.5 Software programming example

• Enter the extended function mode

Writing 87h to index address port twice will enter the extended function mode.

Example x86 assembly code:

```
mov dx, 4Eh
mov al, 87h
out dx, al
out dx, al
```

Example C code:

```
outportb(0x4E, 0x87);
outportb(0x4E, 0x87);
```

• Exit the extended function mode

Writing AAh to index address port will exit the extended function mode.

Example x86 assembly code:

```
mov dx, 4Eh
mov al, 0AAh
out dx, al
```

Example C code:

```
outportb(0x4E, 0xAA);
```

• Select logic device number

Example x86 assembly code:

```
mov dx, 4Eh
mov al, 007h ;LDN selection register
out dx, al
mov dx, 4Fh
mov al, 008h ;Select LDN=8, GPIO Port6
;or Select LDN9, GPIO Port2
out dx, al
```

Example C code:

```
outportb(0x4E, 0x07); //LDN selection register
```

```
outportb(0x4F, 0x08); //Select LDN=8, GPIO Port6  
or  
outportb(0x4E, 0x07); //LDN selection register  
outportb(0x4F, 0x09); //Select LDN=9, GPIO Port2
```

• Activate the logic device

Example x86 assembly code:

```
mov dx, 4Eh  
mov al, 030h ;Logic device activation control reg.  
out dx, al  
mov dx, 4Fh  
in al, dx  
or al, 004h ;Set bit2 to enable GPIO Port6 if LDN=8  
or al, 002h ;Set bit1 to enable GPIO Port2 if LDN=9  
out dx, al
```

Example C code:

```
outportb(0x4E, 0x30); //Logic device activation control  
outportb(0x4F, (inportb(0x4F)|0x2));  
//Set bit[1] to enable GPIO Port2 if LDN=9  
Or  
outportb(0x4E, 0x30); //Logic device activation control  
outportb(0x4F, (inportb(0x4F)|0x4));  
//Set bit[2] to enable GPIO Port6 if LDN=8
```

• Configure GPIO register

Example x86 assembly code:

```
mov dx, 4Eh  
mov al, 0E6h ;GPIO inversion reg.  
out dx, al  
mov dx, 4Fh  
mov al, 000h ;0 – normal, 1 - inverted  
out dx, al
```

```
mov dx, 4Eh  
mov al, 0E4h ;GPIO I/O selection reg.  
out dx, al  
mov dx, 4Fh  
mov al, 0FFh ;0 – Output, 1 – Input  
;or mov al, 0F0h to set output  
out dx, al
```

Example C code:

```
outportb(0x4E, 0xE6); //GPIO I/O selection reg.  
outportb(0x4F, 0x0); //0 – normal, 1 – inverted
```

```
outportb(0x4E, 0xE4); //GPIO inversion reg.  
outportb(0x4F, 0xFF); //0 – Output, 1 - Input  
or  
outportb(0x4E, 0xE4); //GPIO inversion reg.  
outportb(0x4F, 0xF0); //0 – Output, 1 – Input
```

• Read GPIO value

Example x86 assembly code:

```
mov dx, 4Eh  
mov al, 0E5h ;GPIO data reg.  
out dx, al  
mov dx, 4Fh  
in al, dx ;Bit[3::0] = GPI[3::0] value
```

Example C code:

```
outportb(0x4E, 0xE5); //GPIO data reg.  
GP = inportb(0x4F); //Bit[3::0] = GPI[3::0]
```

• Write GPIO value

Example x86 assembly code:

```
;Set GPO62  
mov dx, 4Eh  
mov al, 0E5h ;GPIO data reg.  
out dx, al  
mov dx, 4Fh  
in al, dx  
or al, 00000100b ;Bit2 = GPO62  
out dx, al
```

```
;Clear GPO62  
mov dx, 4Eh  
mov al, 0E5h ;GPIO data reg.  
out dx, al  
mov dx, 4Fh  
in al, dx  
and al, not 00000100b  
out dx, al
```

Example C code:

```
//Set GPO62
outportb(0x4E, 0xE5); //GPIO data reg.
Outportb(0x4F, (inportb(0x4F)|0x4)); //Set Bit[2]

//Clear GPO62
outportb(0x4E, 0xE5); //GPIO data reg.
Outportb(0x4F, (inportb(0x4F)&0xFB)); //Clear Bit[2]
```

The followings are C language source code:

```
#include "stdio.h"
#include "conio.h"

//Super I/O index access port
#define INDEXP 0x4E
#define DATAP 0x4F

//Enter super I/O programming mode
#define ENTERPRG { \
outportb(INDEXP, 0x87); \
outportb(INDEXP, 0x87);}

//Super I/O index write
#define WRITEREG(reg,val) { \
outportb(INDEXP, reg); \
outportb(DATAP, val);}

//Exit super I/O programming mode
#define EXITPRG { \
outportb(INDEXP, 0xAA);}

//Select logic device number
#define SELETDEV(lidn) { \
outportb(INDEXP, 7); \
outportb(DATAP, lidn); }

//Initialize the GPIO port2
int InitGP2() {

//Start the super I/O chip programming
```

ENTERPRG

//Select the logical device 9, GP2

SELETDEV(9)

//Activate GP1

WRITEREG(0x30, (inportb(0x30)|0x2))

WRITEREG(0xE6, 0x0)

WRITEREG(0xE4, 0xFF)

//Exit the super I/O chip programming

EXITPRG

return 0;

}

//Initialize the GPIO port6

int InitGP6() {

//Start the super I/O chip programming

ENTERPRG

//Select the logical device 8, GP6

SELETDEV(8)

//Activate GP1

WRITEREG(0x30, (inportb(0x30)|0x4))

WRITEREG(0xE6, 0x0)

WRITEREG(0xE4, 0xF0)

//Exit the super I/O chip programming

EXITPRG

return 0;

}

//Read GPIO Port2

unsigned char ReadGP2() {

unsigned char cGP2;

```
//Start the super I/O chip programming
```

```
ENTERPRG
```

```
//Select the logical device 9, GP2
```

```
SELETDEV(9)
```

```
//Read GPIO Value
```

```
outportb(INDEXP, 0xE5);
```

```
cGP2 = inportb(DATAP);
```

```
cGP2 = cGP2 & 0xF;
```

```
//Exit the super I/O chip programming
```

```
EXITPRG
```

```
return cGP2;
```

```
}
```

```
//Write GPIO Port6
```

```
int WriteGP6(unsigned char cGP6) {
```

```
//Start the super I/O chip programming
```

```
ENTERPRG
```

```
//Select the logical device 8, GP6
```

```
SELETDEV(8)
```

```
//Write GP1 value
```

```
WRITEREG(0xE5, cGP6)
```

```
//Exit the super I/O chip programming
```

```
EXITPRG
```

```
return 0;
```

```
}
```

```
int main() {
```

```
unsigned char cGP;
```

```
//Initialize the GPIO port
```

```
InitGP2();
```



```
InitGP6();

//Read GPIO Port 2
cGP = ReadGP2();
printf("\nRead GPIO Port 2 Status: %X", cGP);

//Write GPIO Port 6
WriteGP6(cGP);
printf("\nSet GPIO Port 6 Status: %X", cGP);

return 0;
```

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows XP. The software and drivers are included with the motherboard. The contents include **Intel (R) Chipset Atom D525 + Intel ICH8M**, **Intel (R) GMA 3150 VGA Chipset**, **Intel (R) 82574L Network Adapter**, **Realtek ALC662 HD Audio Driver**, **Touch Panel Driver**.

Installation instructions are given below.

Important Note:

After installing your Windows operating system (Windows XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

I



4.1 Intel Chipset Driver

To install the Intel chipset driver, please follow the steps below.

Step 1. Access Industrial Panel PC. Select **Intel(R) Chipset Atom D525 + Intel ICH8M**.



Step 2. Click **Next** to setup program.



Step 3. Read the license agreement. Click **Yes** to accept the terms of the license agreement.



Step 4. Click **Next** to continue.



Step 5. Click Next.



Step 6. Select Yes, I want to restart this computer now. Click **Finish** then remove any installation media from the drives.



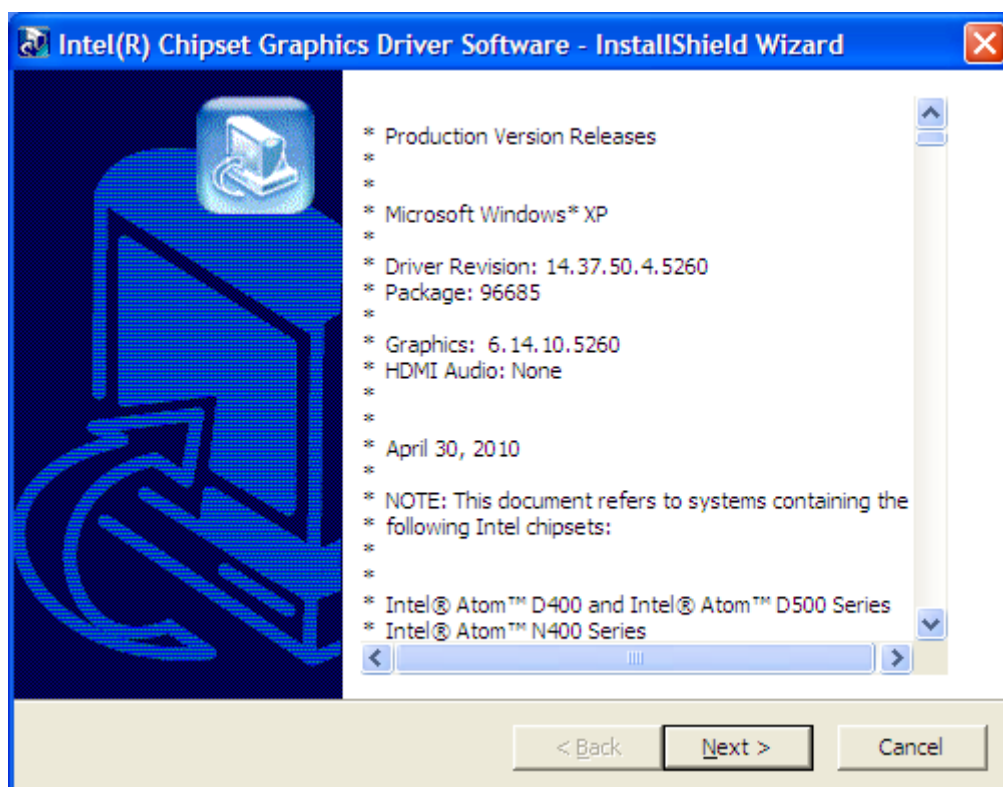
4.2 Intel GMA 3150 VGA Chipset Driver

To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1. Select **Intel(R) GMA 3150 VGA Chipset**.



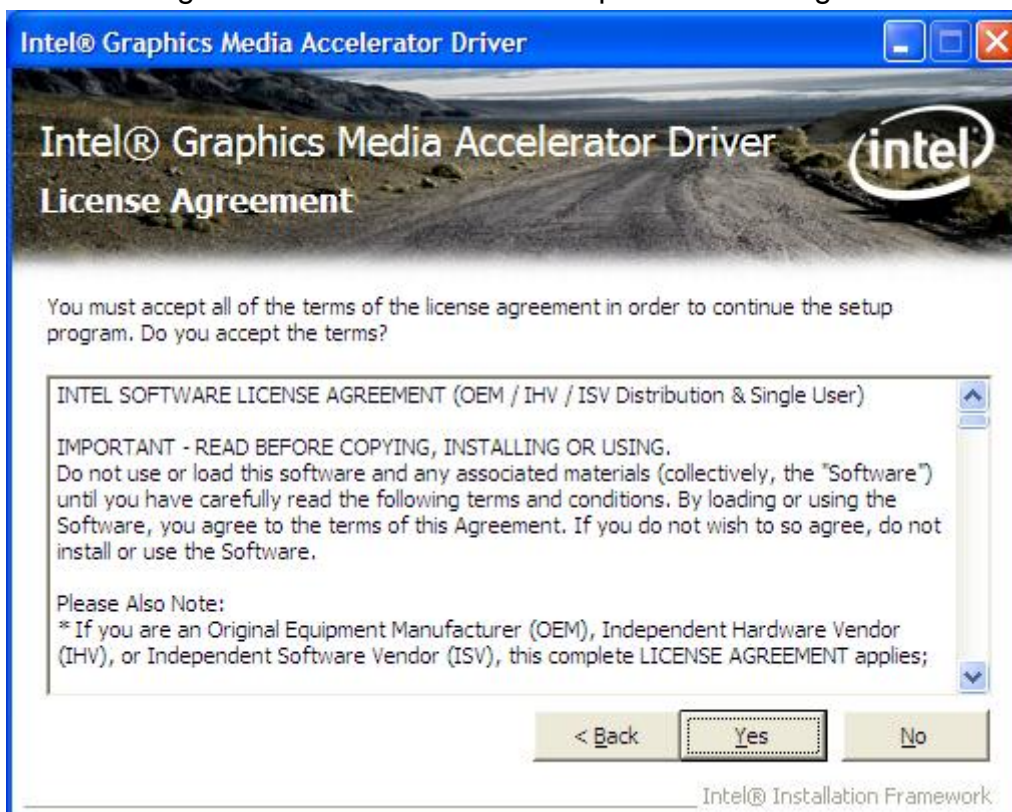
Step 2. Click **Next** to continue.



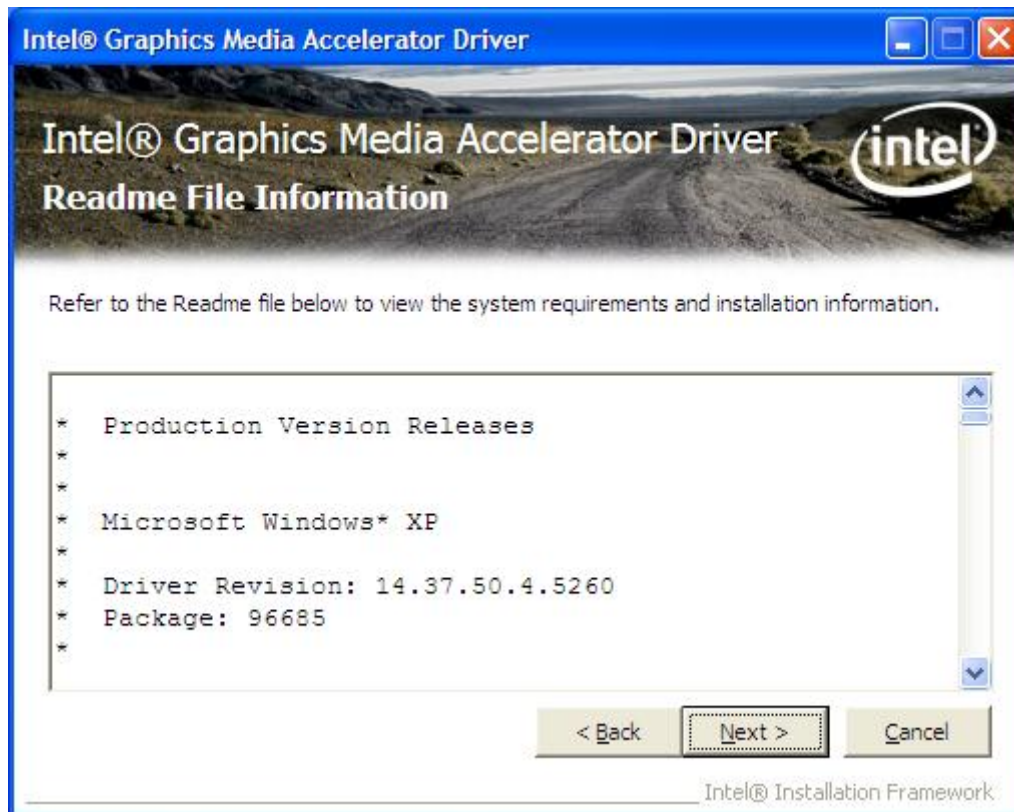
Step 3. Click **Next** to continue setup program.



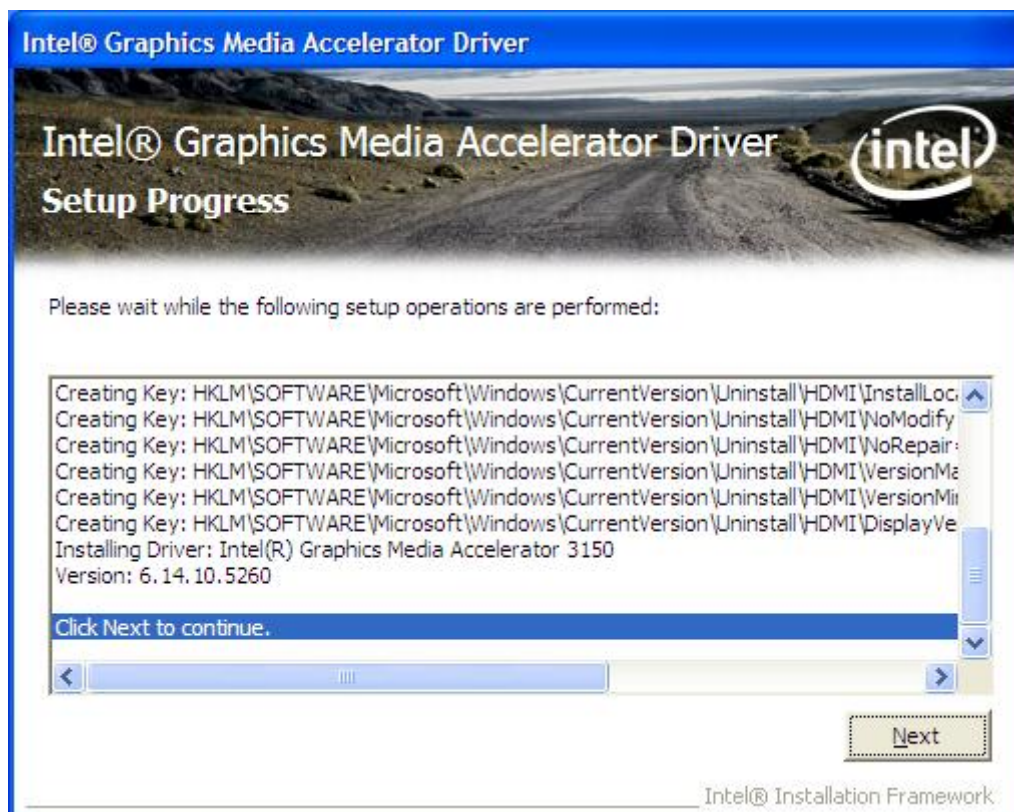
Step 4. Read the license agreement. Click **Yes** to accept the license agreement.



Step 5. Click Next.



Step 6. Click Next to continue.



Step 7. Select **Yes, I want to restart this computer now.** Click **Finish** then remove any installation media from the drives.



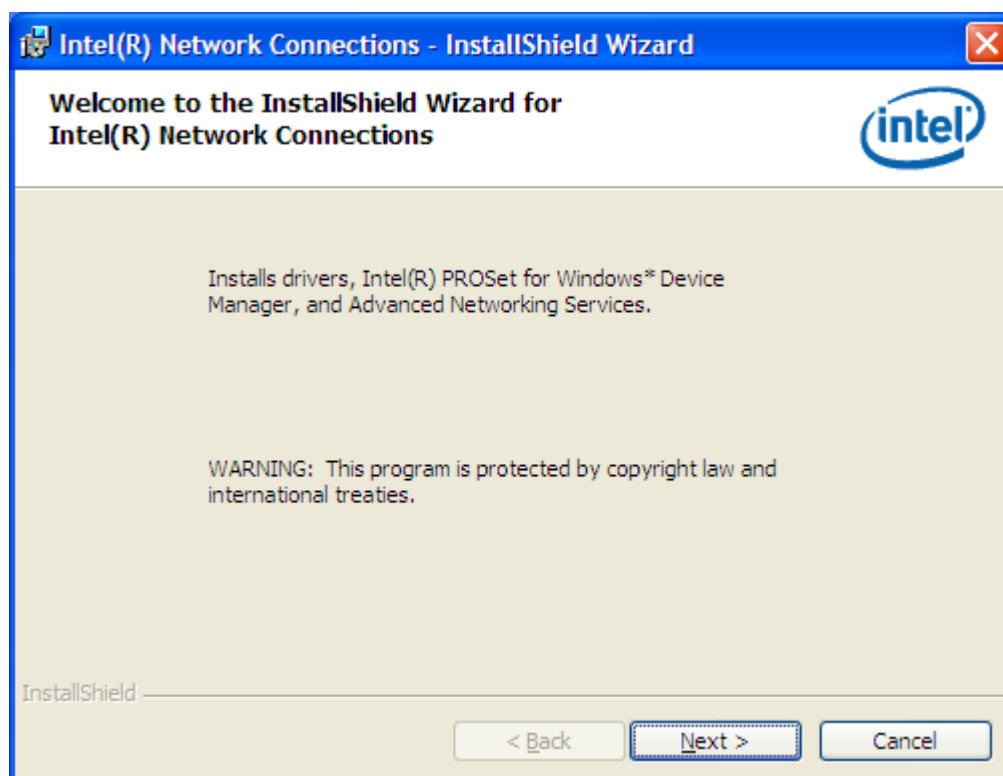
4.3 Intel 82574L Network Adapter Driver

To install the Intel 82574L Network adapter Driver, please follow the steps below.

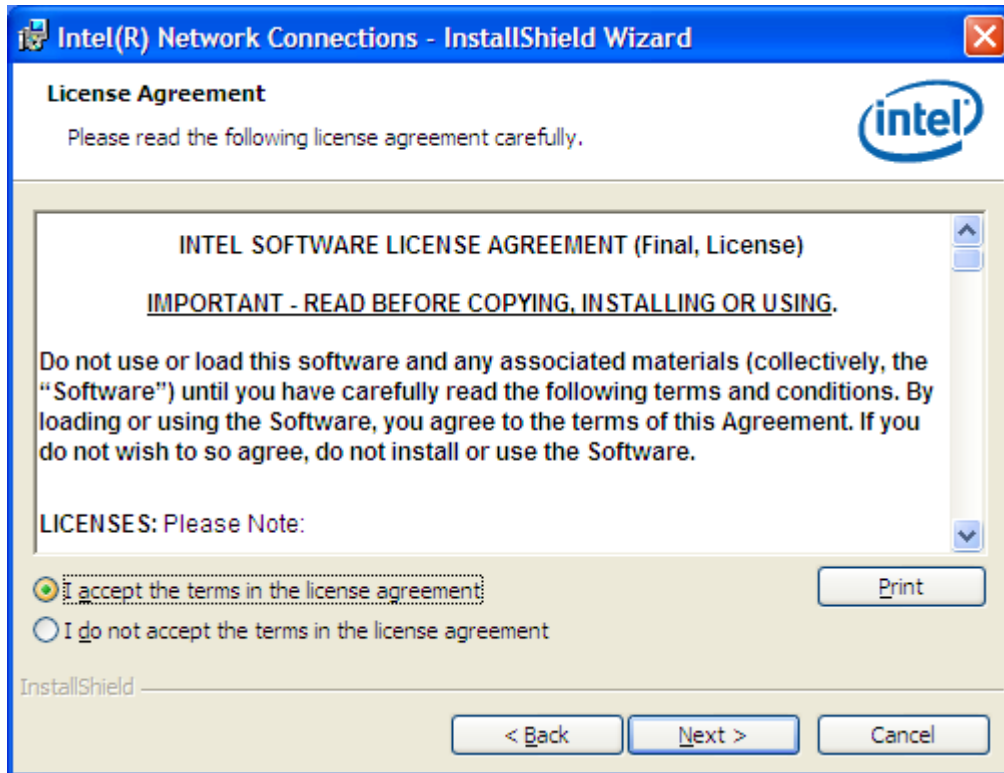
Step 1. Select **Intel(R) 82574L Network Adapter**.



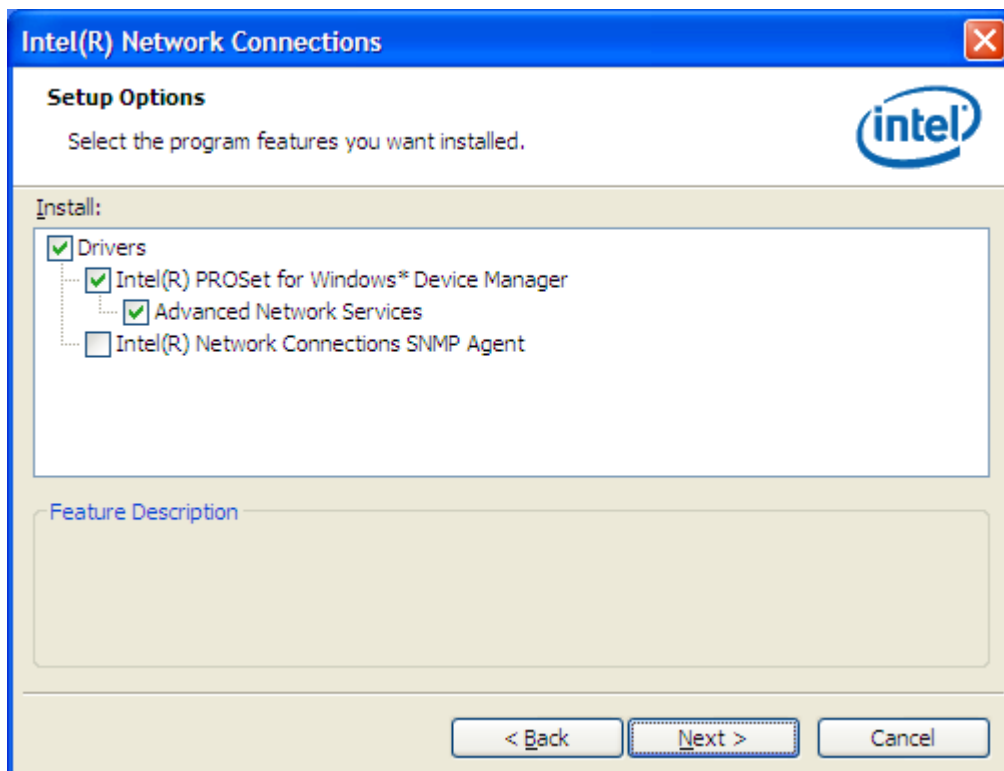
Step 2. Click **Next** to continue.



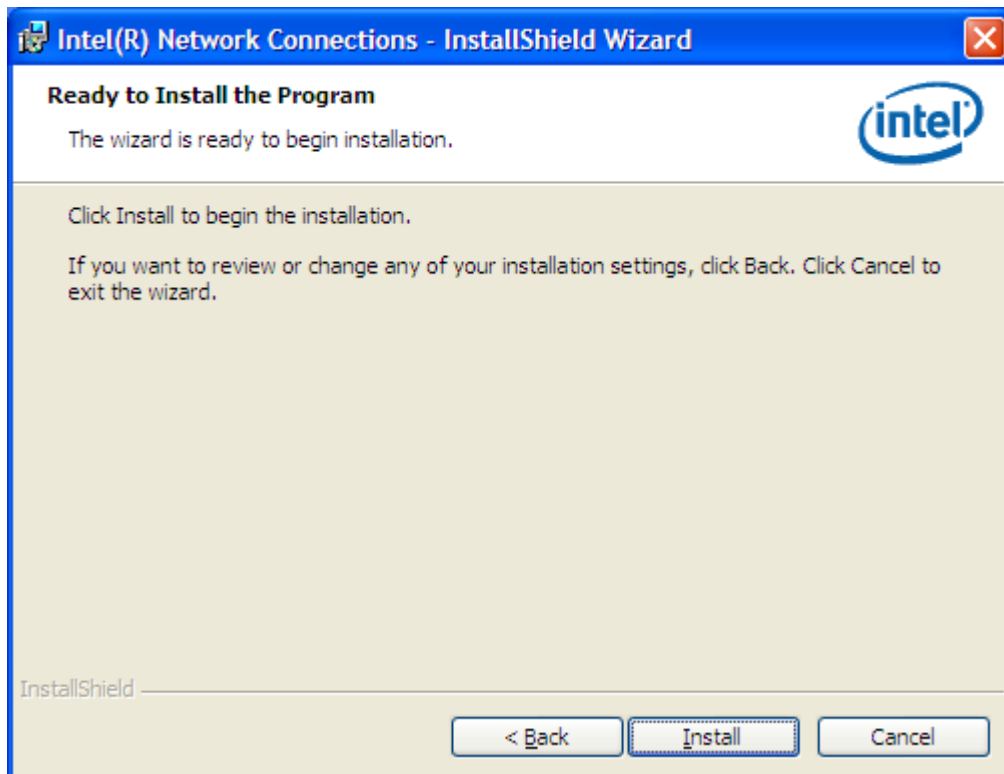
Step 3. Read license agreement. Select **I accept the terms in the license agreement** then click **Next** to continue.



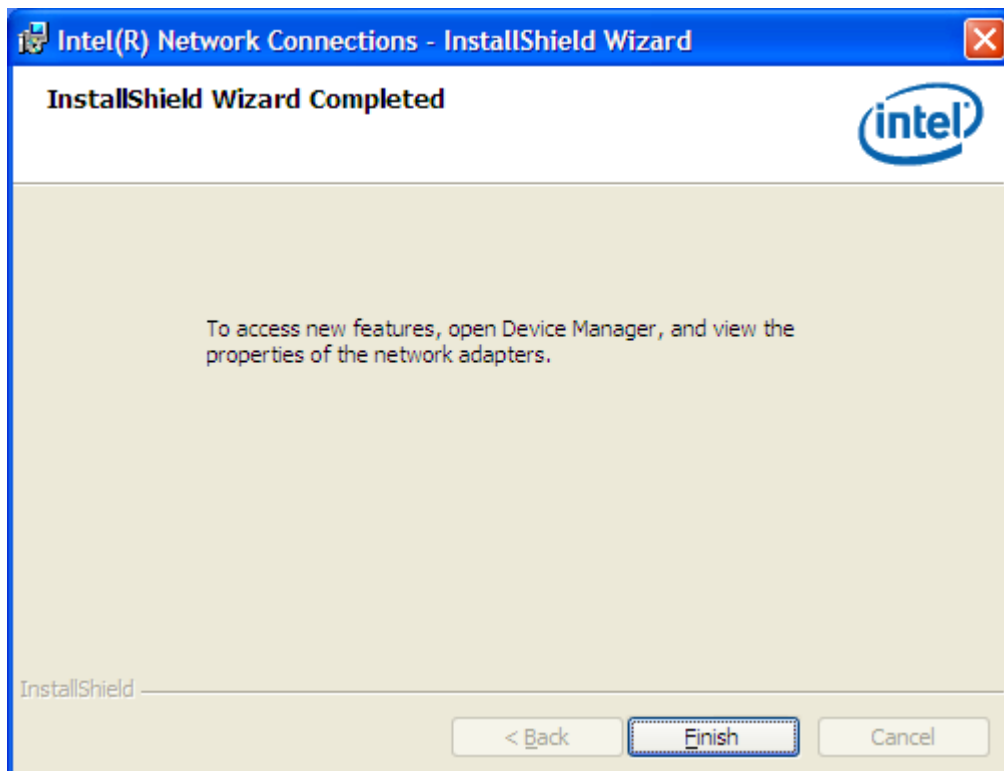
Step 4. Select **Drivers, Intel(R) PROSet for Windows* Device Manager, Advanced Network Services**. Click **Next** to continue.



Step 5. Click **Install** to begin the installation.



Step 6. Click **Finish** to complete the installation.



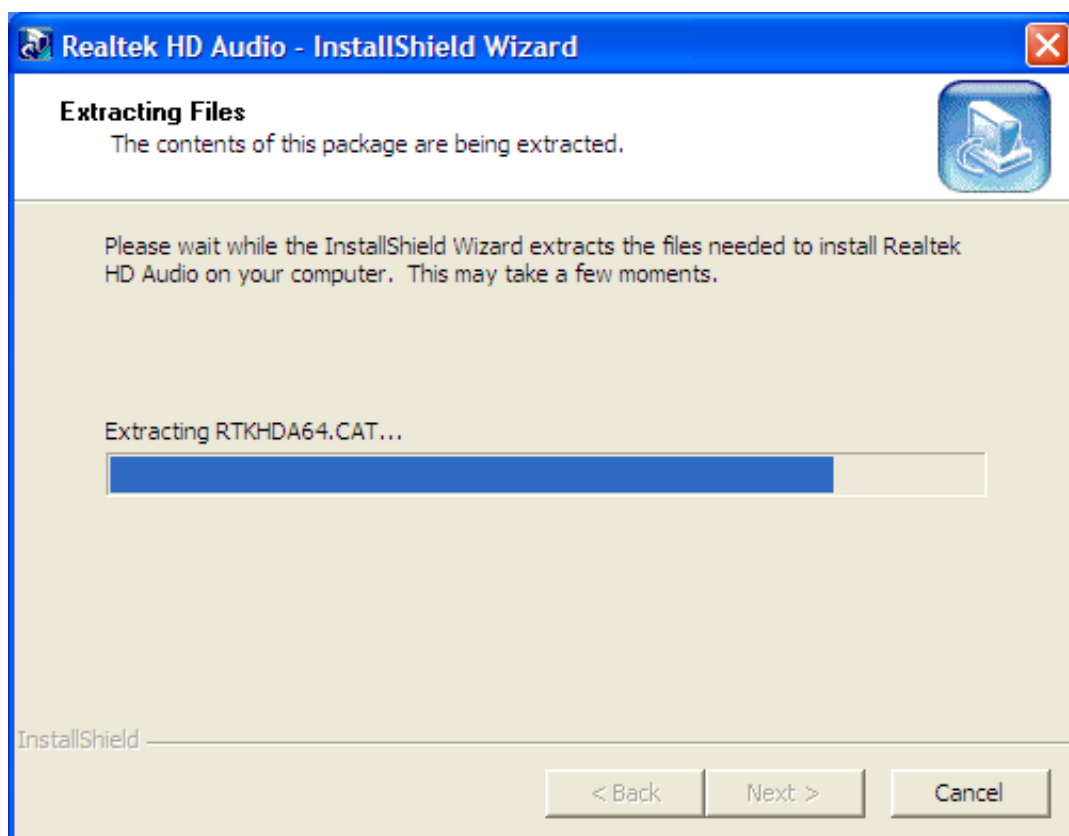
4.4 Realtek HD Audio Driver Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

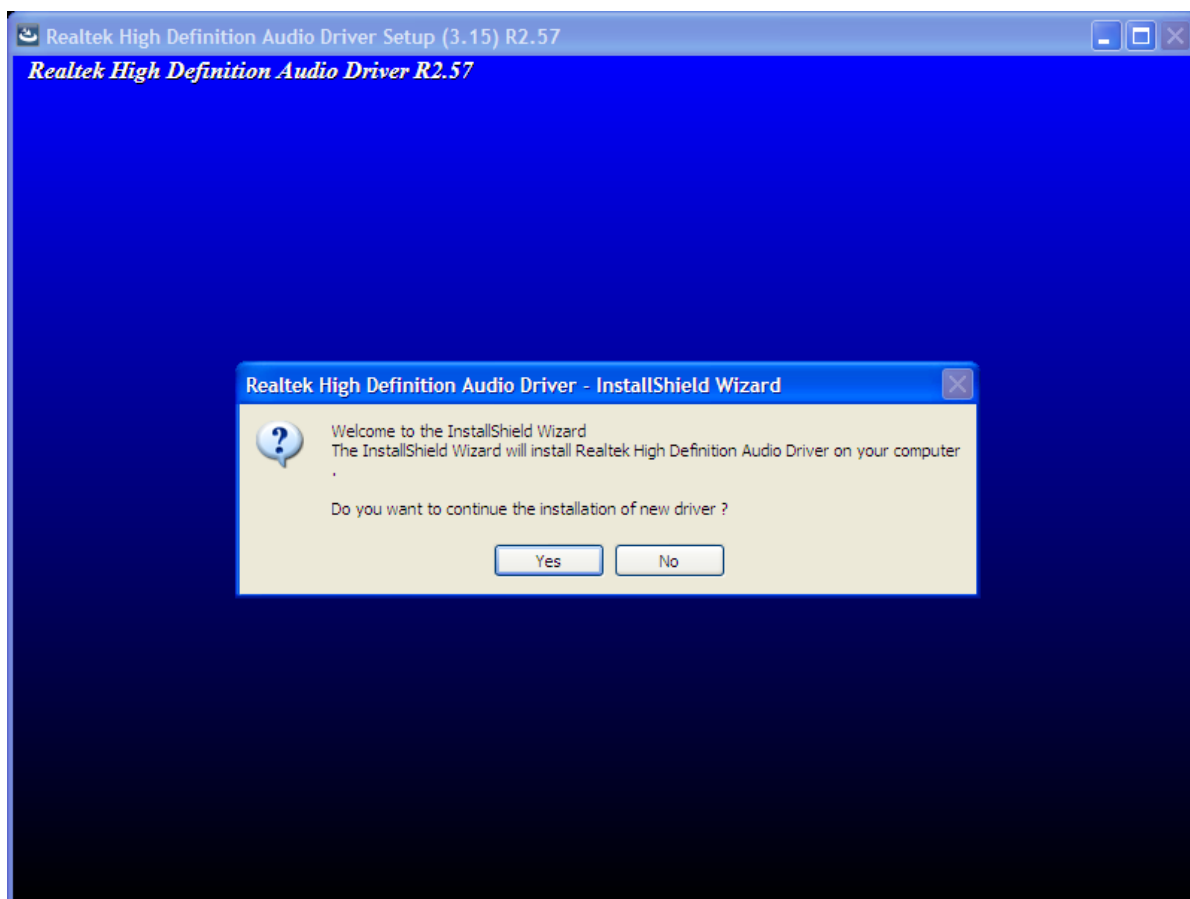
Step 1. Select **Realtek ALC662 HD Audio Driver** from the list.



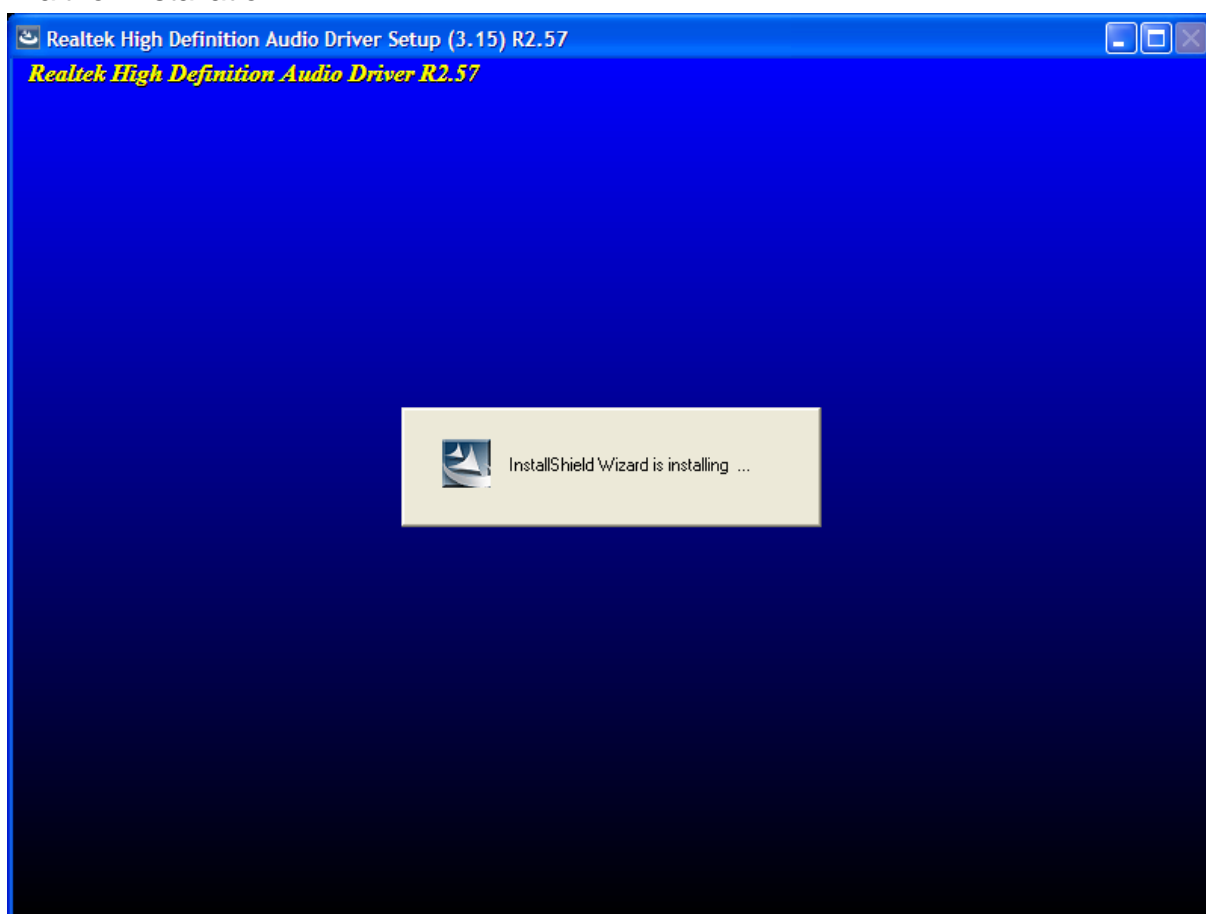
Step 2. Wait for extracting the files then click **Next** to continue.



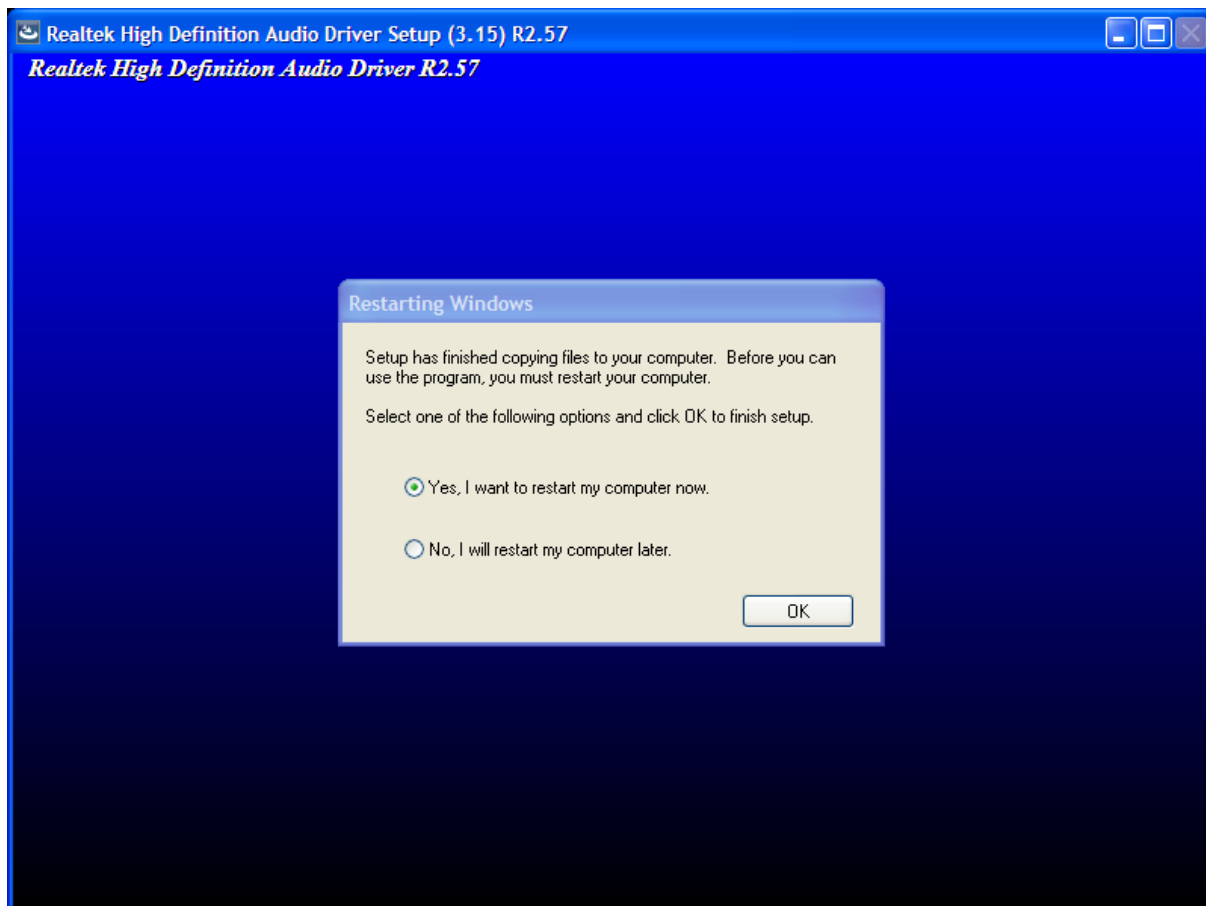
Step 3. Click **Yes** to continue the installation.



Step 4. Wait for installation.



Step 5. Select **Yes, I want to restart my computer now.** then click **OK.**



Chapter 5 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your PenMount 6000 Controller Board to work with different operating systems.

NOTE: PenMount USB drivers support up to 15 USB controllers.

5.1 Introduction to Touch Screen Controller Board

PenMount 6300 USB control board is a touch screen control board designed for USB interface and specific for 4, 5, 8-wire touch screens. It is designed with USB interface features with multiple devices supporting function. PenMount 6300 control board using PenMount 6000 controller that has been designed for those who may like an all-in-one solution with 10-bit A/D converter built-in to make the total printed circuit board denser, circuit diagram also designed for 12-bit ADC for optional. There are two connectors on this board, one connector is for 4, 5, 8-wire touch screen cable (optional), and another is for 4-pin USB A type cable (optional).



Figure 5.1: Bird's Eye View of Control Board

5.2 Windows 2000/XP/2003/Vista Universal Driver Installation for PenMount 6000 Series

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

5.2.1 Installing Software

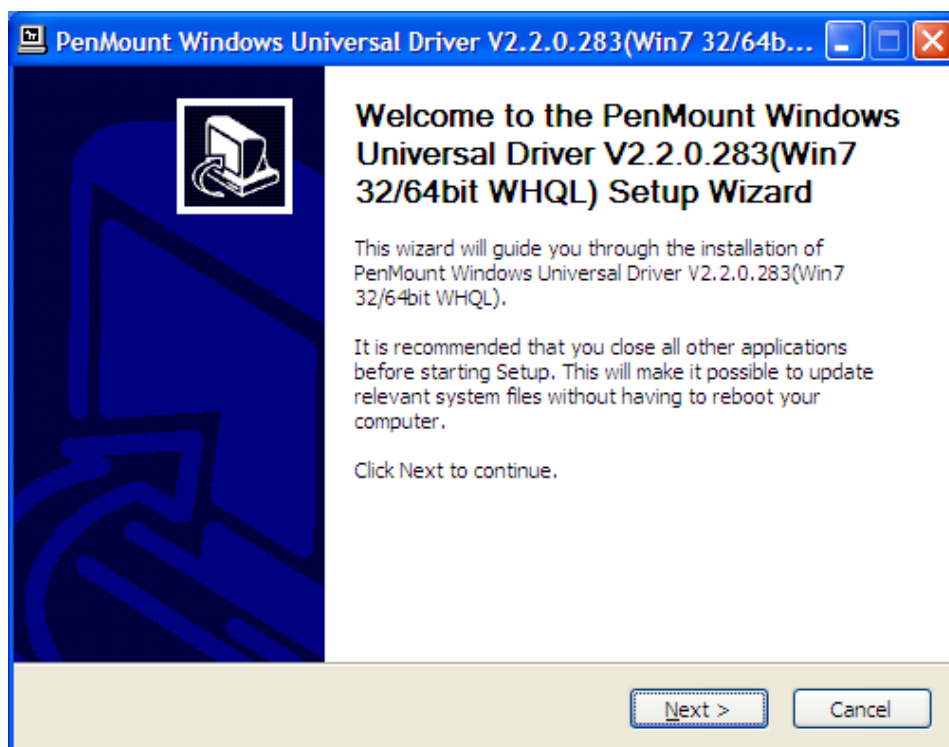
If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 2000/XP driver.

Step 1. Please make sure your PenMount 6000 device had plugged in advance. If your device uses RS232 interface, please plugged in before the machine is turned on. When the system first detects the controller board, a screen appears that shows “Unknown Device”. Do not use this hardware wizard. Press Cancel.

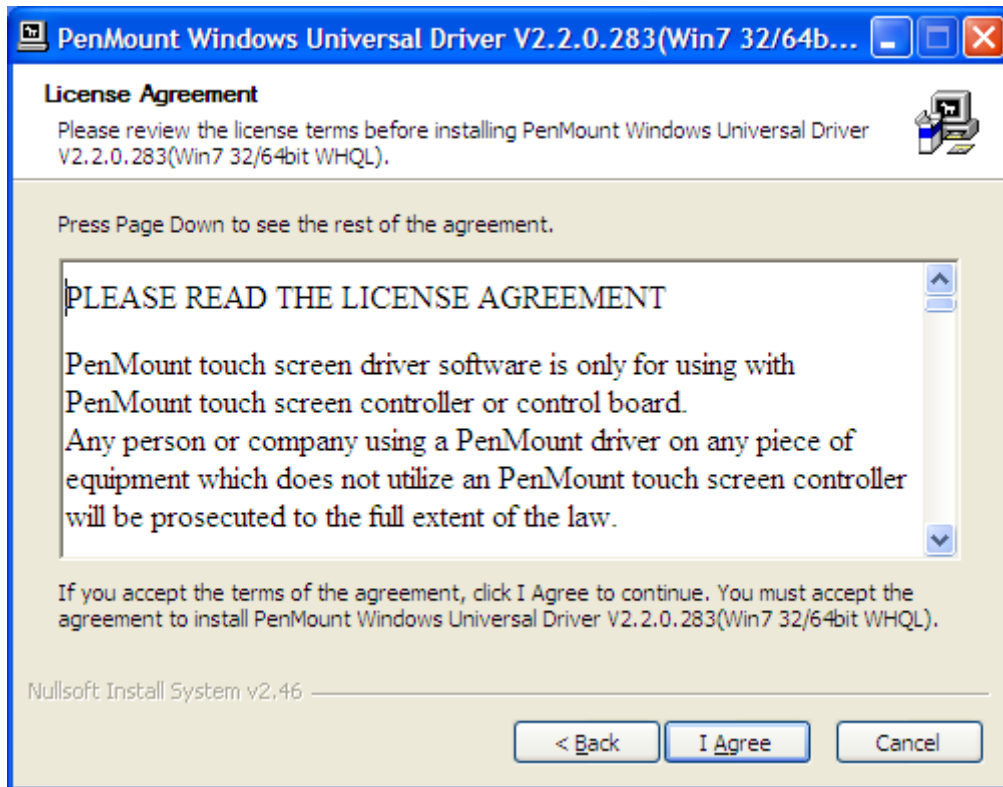
Step 2. Insert the Apex product CD install **setup.exe**. the screen below would appear. Se touch panel driver



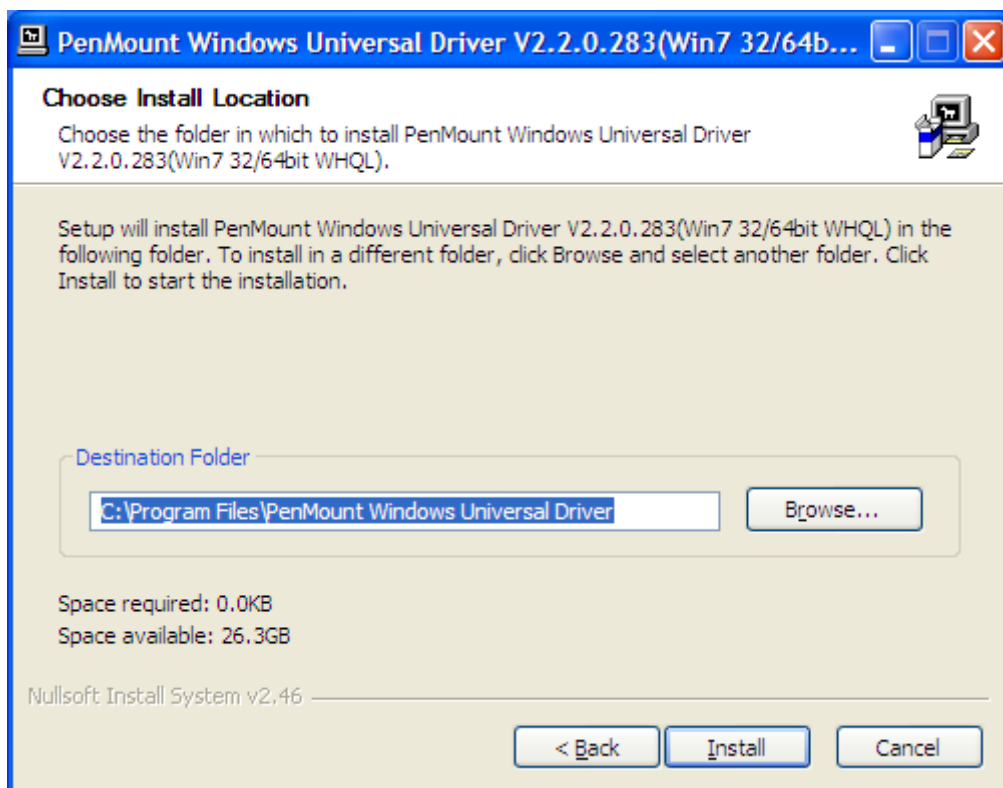
Step 3. Click **Next** to continue.



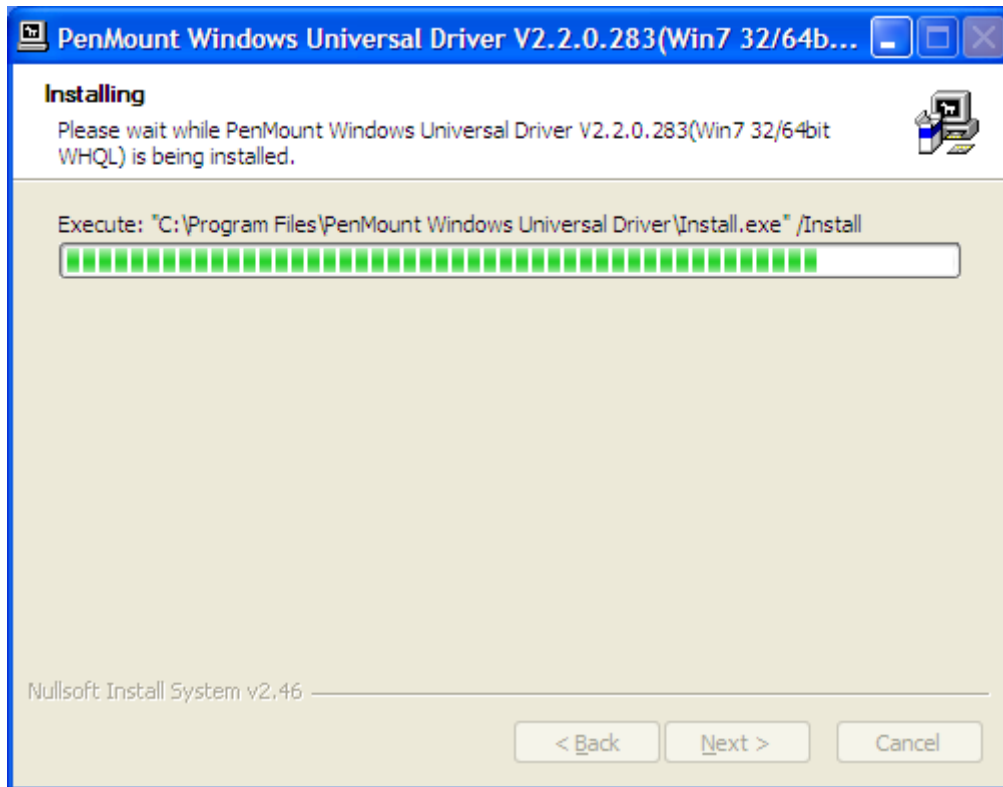
Step 4. Read the license Agreement. Click **I agree** to agree the license agreement.



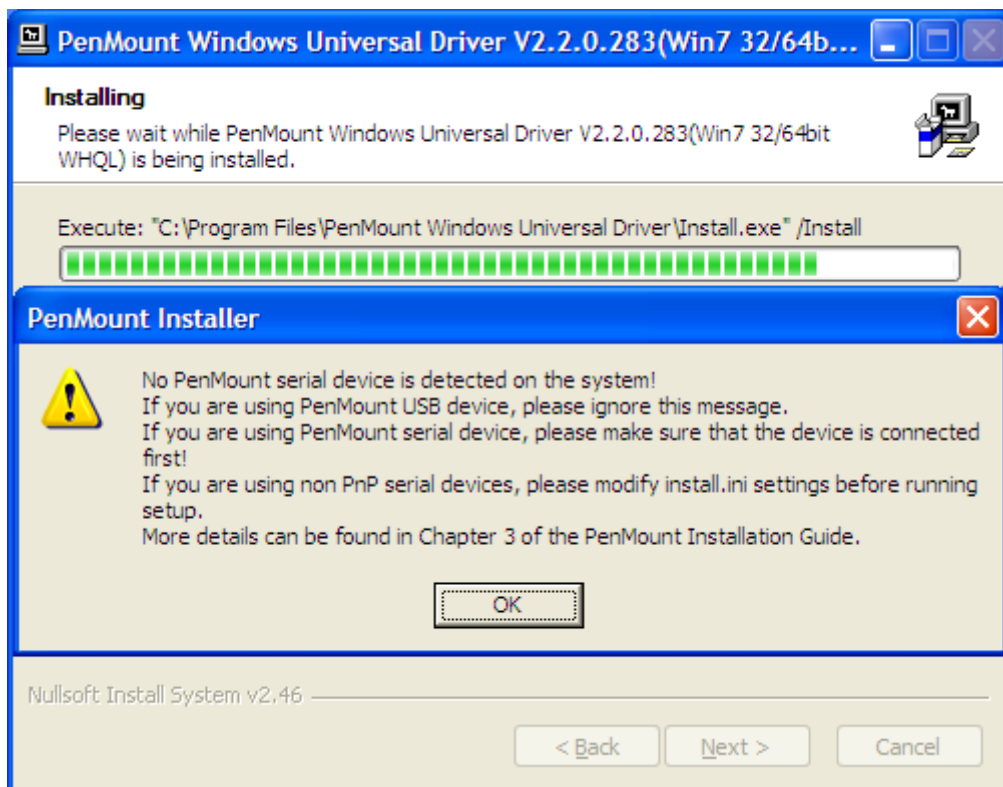
Step 5. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.



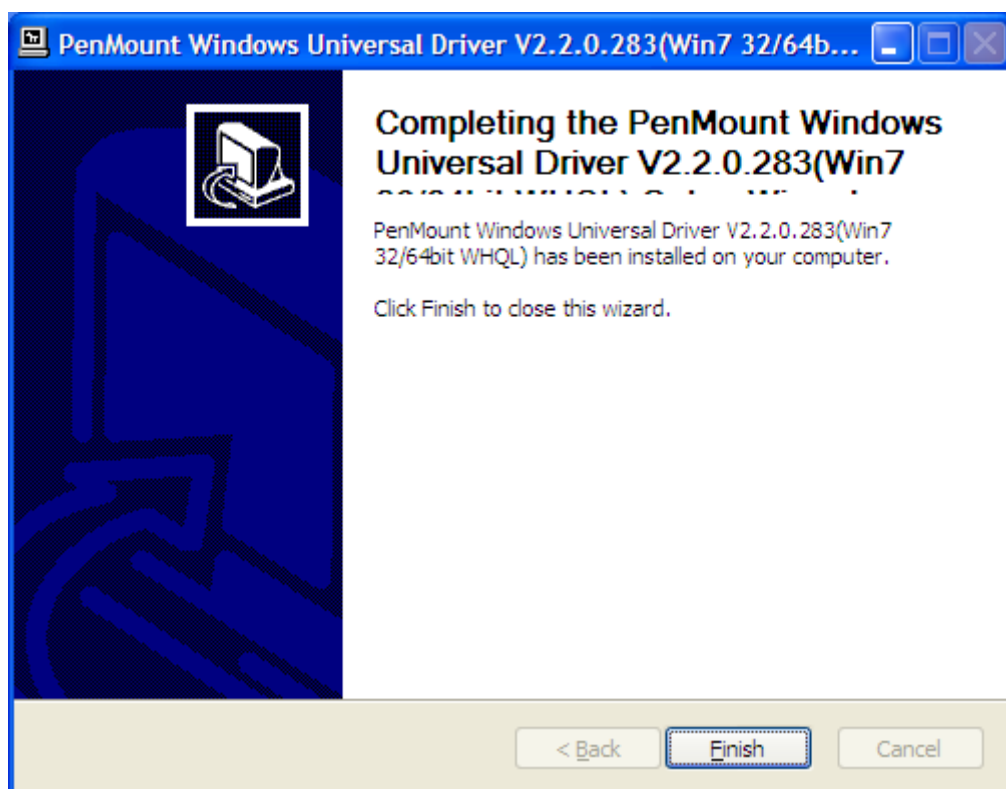
Step 6. Wait for installation. Then click **Next** to continue.



Step 7. Click **OK**.



Step 8. Click **Finish** to complete installation.



5.2.2 Software Functions

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

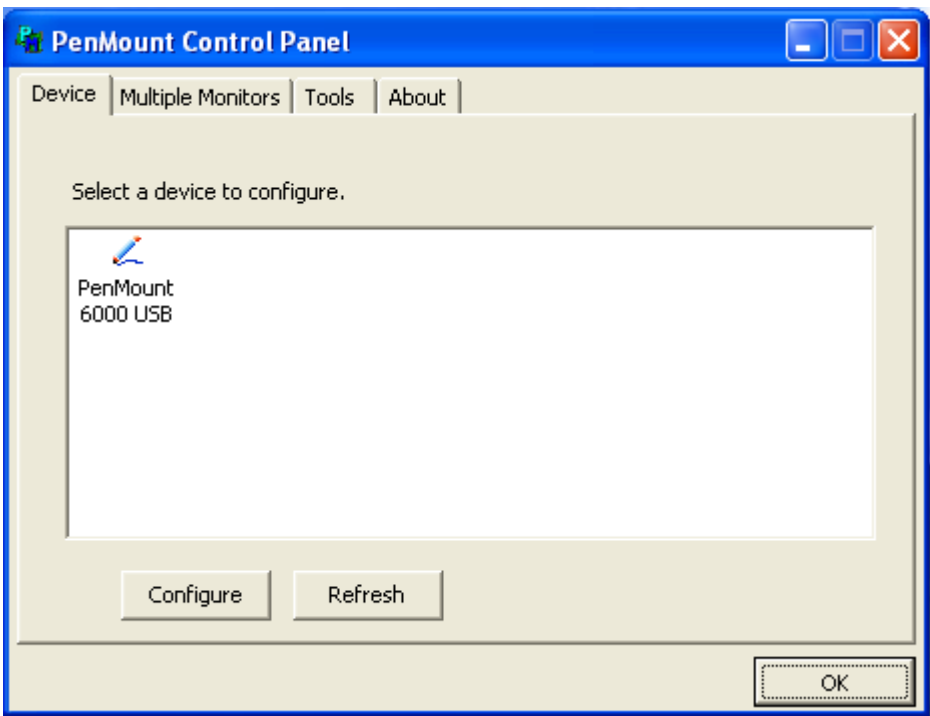
- 1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
- 2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel

The functions of the PenMount Control Panel are **Device**, **Multiple Monitors**, **Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices are detected on your system.



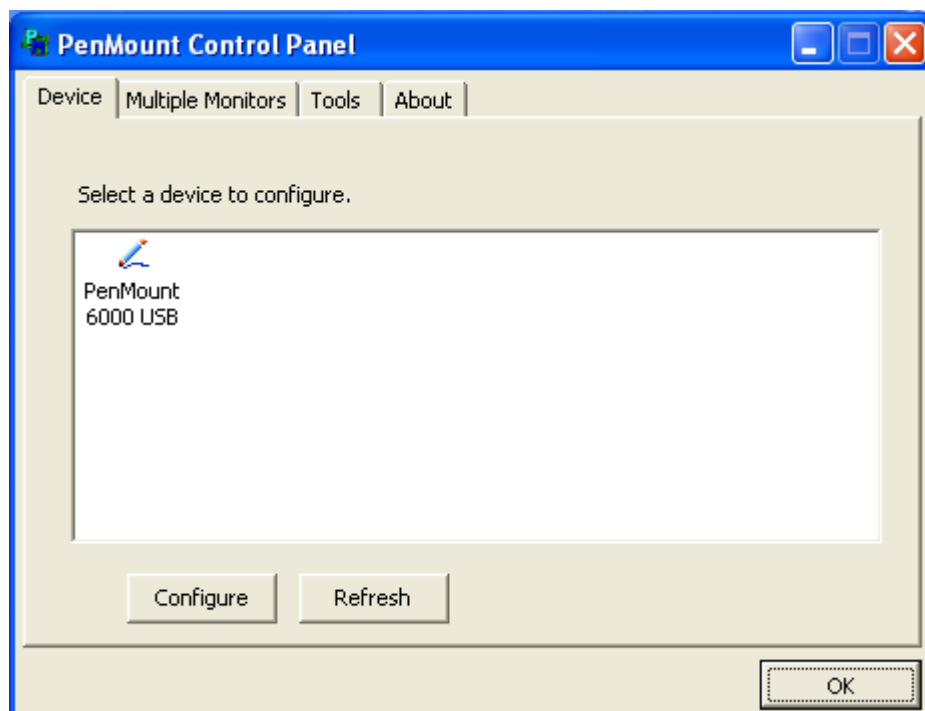
Calibrate

This function offers two ways to calibrate your touch screen. ‘Standard Calibration’ adjusts most touch screens. ‘Advanced Calibration’ adjusts aging touch screens.

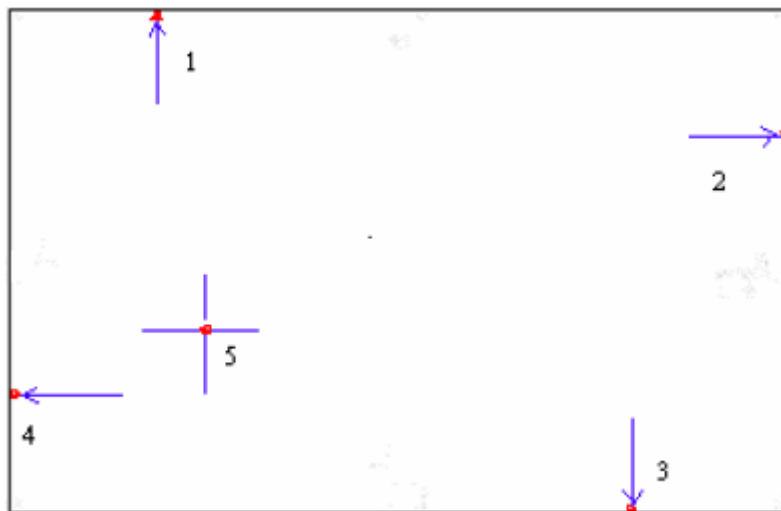
Standard Calibration	Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.
----------------------	--

Advanced Calibration	Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'.
Command Calibration	Command call calibration function. Use command mode call calibration function, this can uses Standard, 4, 9, 16 or 25 points to calibrate E.g. Please run ms-dos prompt or command prompt c:\Program Files\PenMount Universa Driver\Dmcctrl.exe -calibration 0 (Standard Calibration) Dmcctrl.exe - calibration (\$) 0= Standard Calibration 4=Advanced Calibration 4 9=Advanced Calibration 9 16=Advanced Calibration 16 25=Advanced Calibration 25

Step 1. Please select a device then click **Configure**. You can also double click the device too.

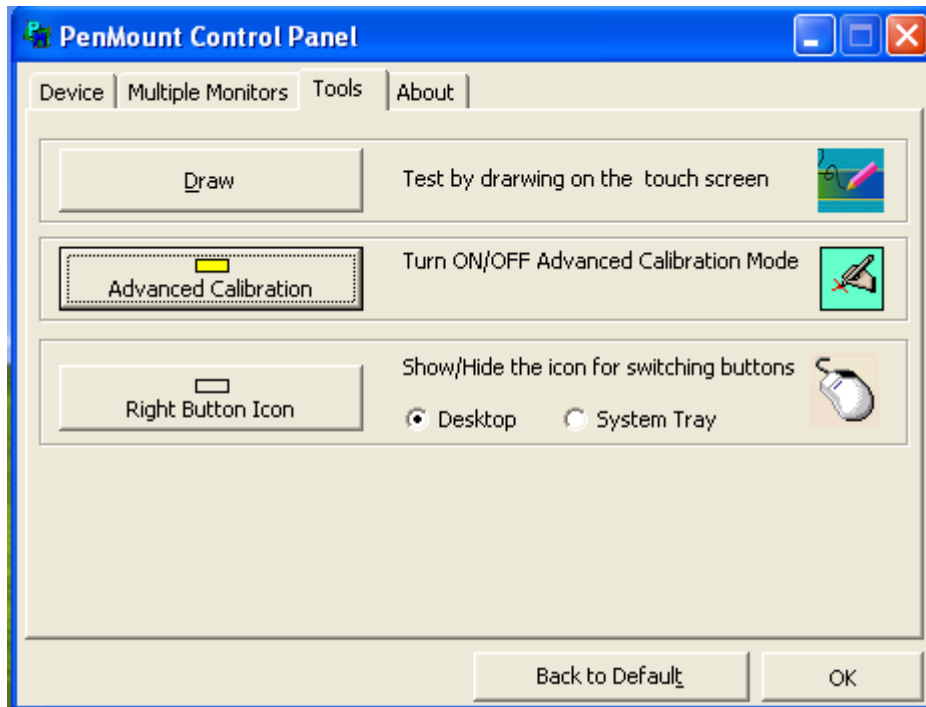


Step 2. Click **Standard Calibration** to start calibration procedure



NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3. Come back to PenMount Control Panel and select **Tools** then Click **Advanced Calibration**.



Step 4. Select **Device** to calibrate, then you can start to do “Advanced Calibration”.



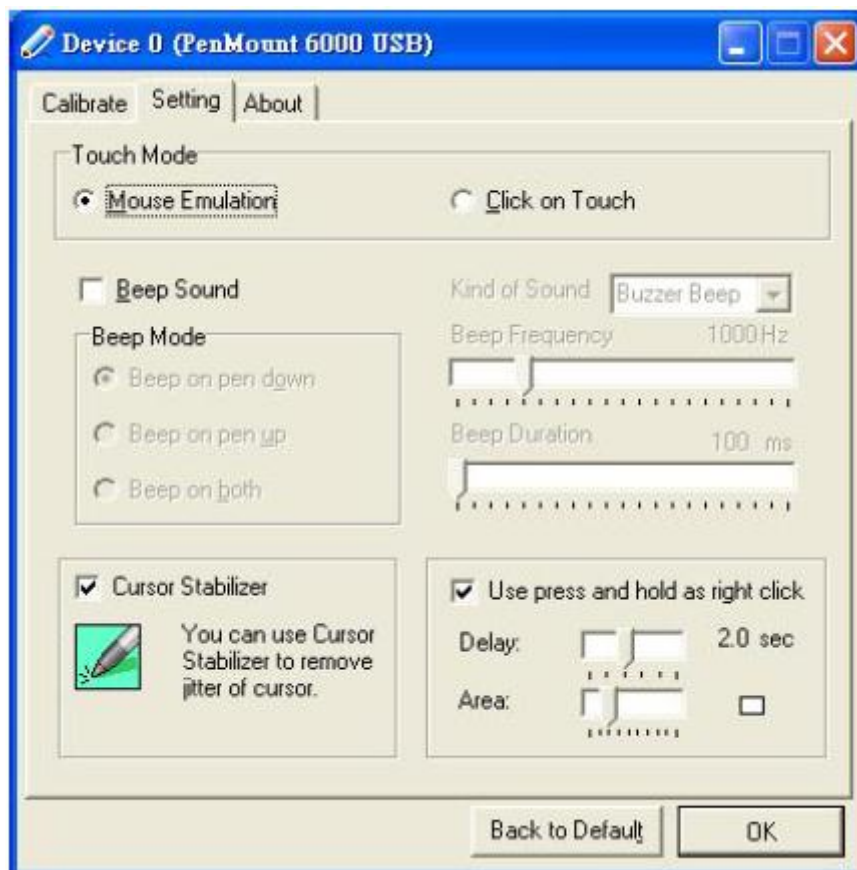
NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.
Turn off EEPROM storage	The function disable for calibration data to write in Controller. The default setting is Enable

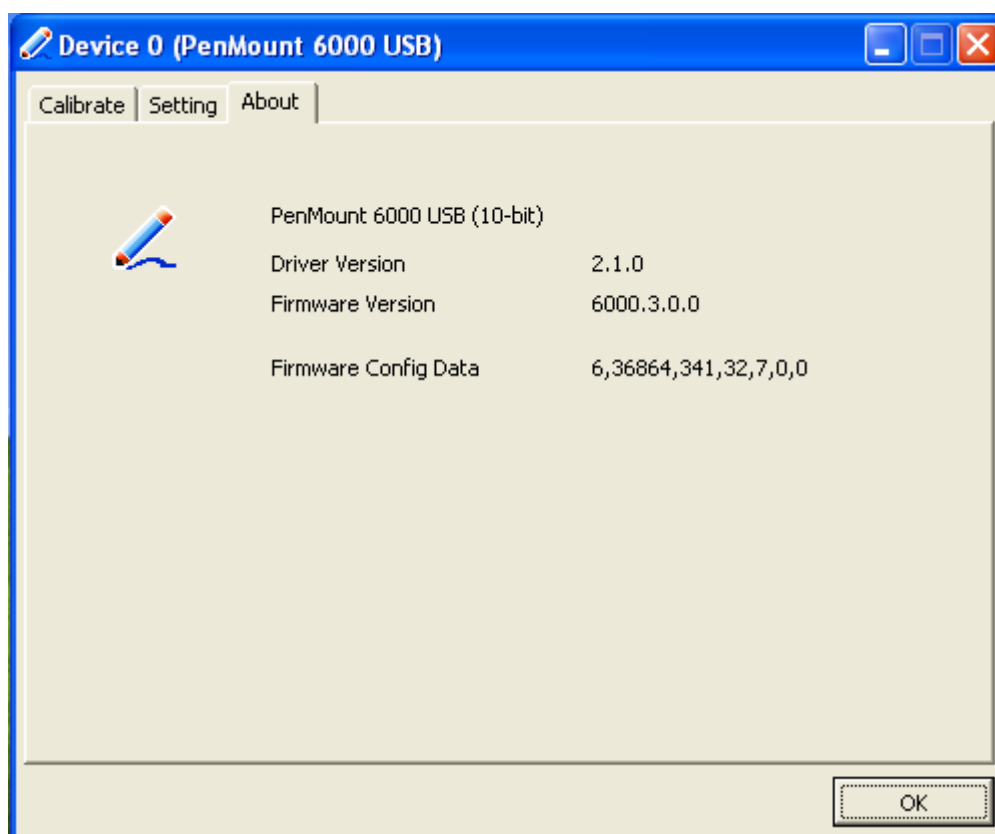
Setting

Touch Mode	<p>This mode enables and disables the mouse's ability to drag on-screen icons—useful for configuring POS terminals.</p> <p>Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.</p> <p>Click on Touch – Select this mode and the mouse only provides a click function, and dragging is disabled</p>
Beep Sound	<p>Enable Beep Sound – turns beep function on and off</p> <p>Beep on Pen Down – beep occurs when pen comes down</p> <p>Beep on Pen Up – beep occurs when pen is lifted up</p> <p>Beep on both – beep occurs when comes down and lifted up</p> <p>Beep Frequency – modifies sound frequency</p> <p>Beep Duration – modifies sound duration</p>
Cursor Stabilizer	Enable the function support to prevent cursor shake.
Use press and hold as right click	You can set the time out and area for you need



About

This panel displays information about the PenMount controller and driver version.



Multiple Monitors

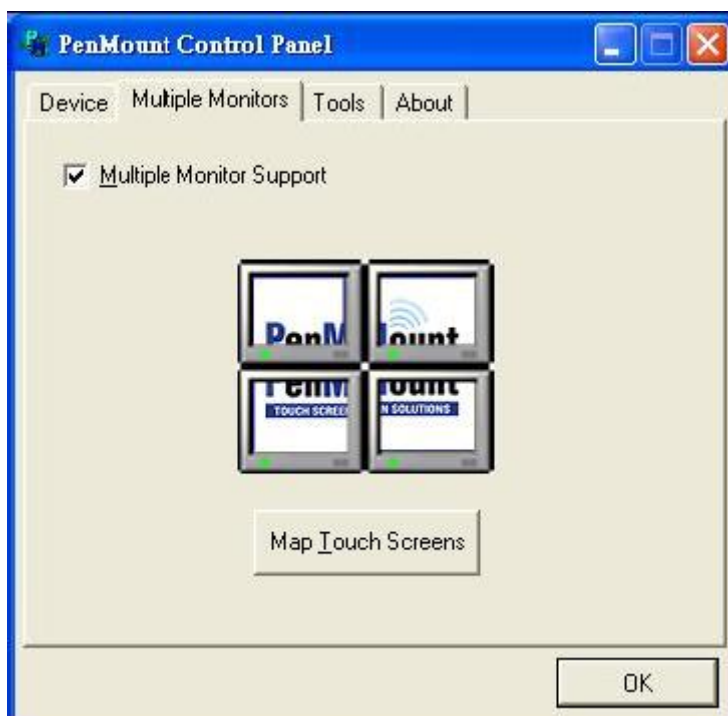
Multiple Monitors supports from two to six touch screen displays for one system. The PenMount drivers for Windows 2000/XP support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the RS-232 interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors supports the following modes:

- Windows Extend Monitor Function
- Matrox DualHead Multi-Screen Function
- nVidia nView Function

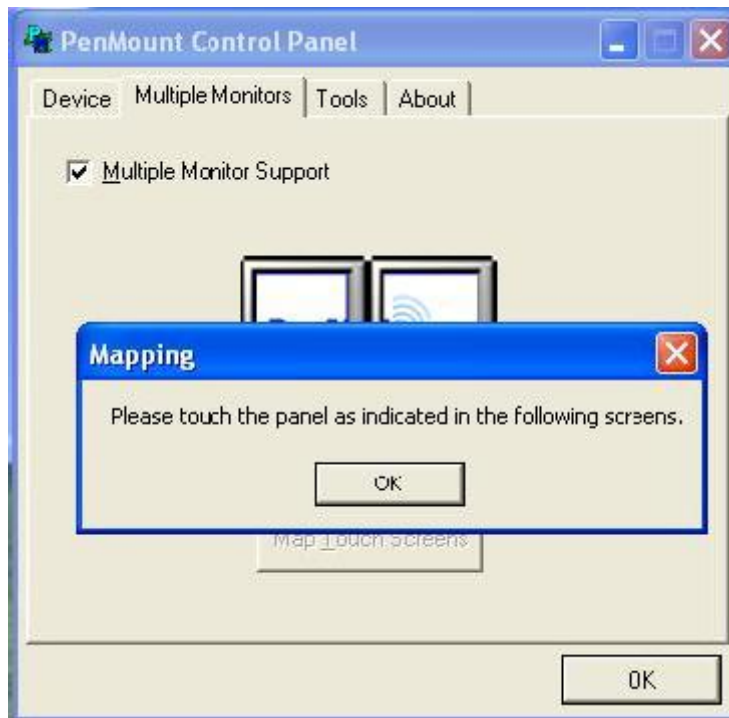
NOTE: The Multiple Monitors function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the Rotating function is disabled.

Enable the multiple display function as follows:

Step 1. Check the **Multiple Monitor Support** box; then click **Map Touch Screens** to assign touch controllers to displays.



Step 2. When the mapping screen message appears, click **OK**.



Step 3. Touch each screen as it displays **Please touch this monitor. Press 'S' to skip** Following this sequence and touching each screen is called **mapping the touch screens**.



Step 4. After the setting procedure is finished, maybe you need to calibrate for each panel and controller

NOTES:

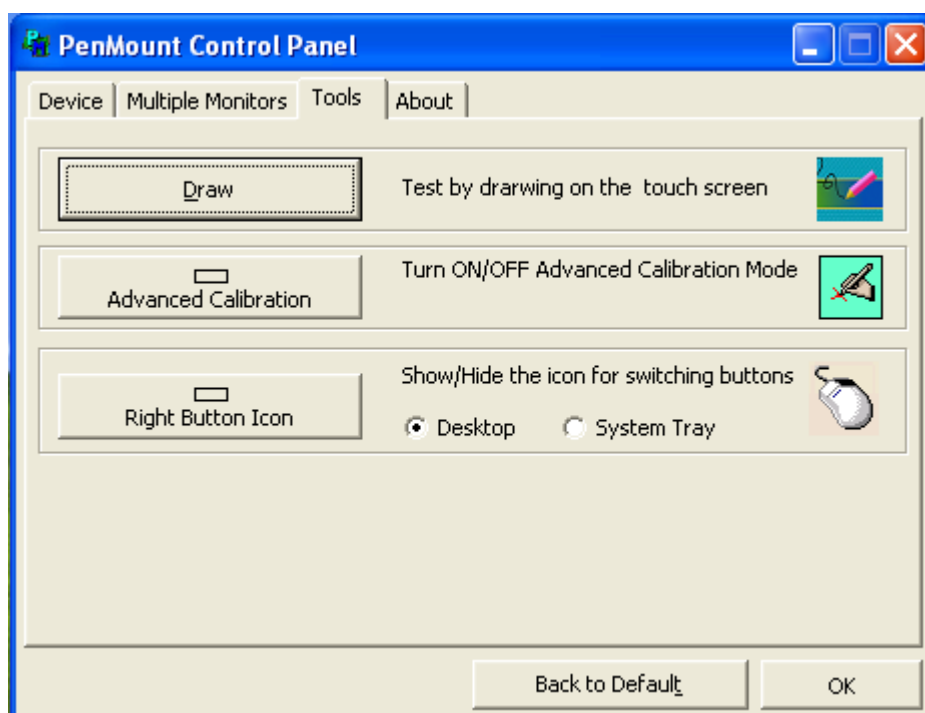
1. If you used a single VGA output for multiple monitors, please do not use the **Multiple Monitors** function. Just follow the regular procedure for calibration on each of your desktop monitors.
2. The Rotating function is disabled if you use the Multiple Monitors function.
3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens** so

the system understands where the displays are.

4. If you more monitor mapping one touch screen, **Please press 'S' to skip mapping step.**

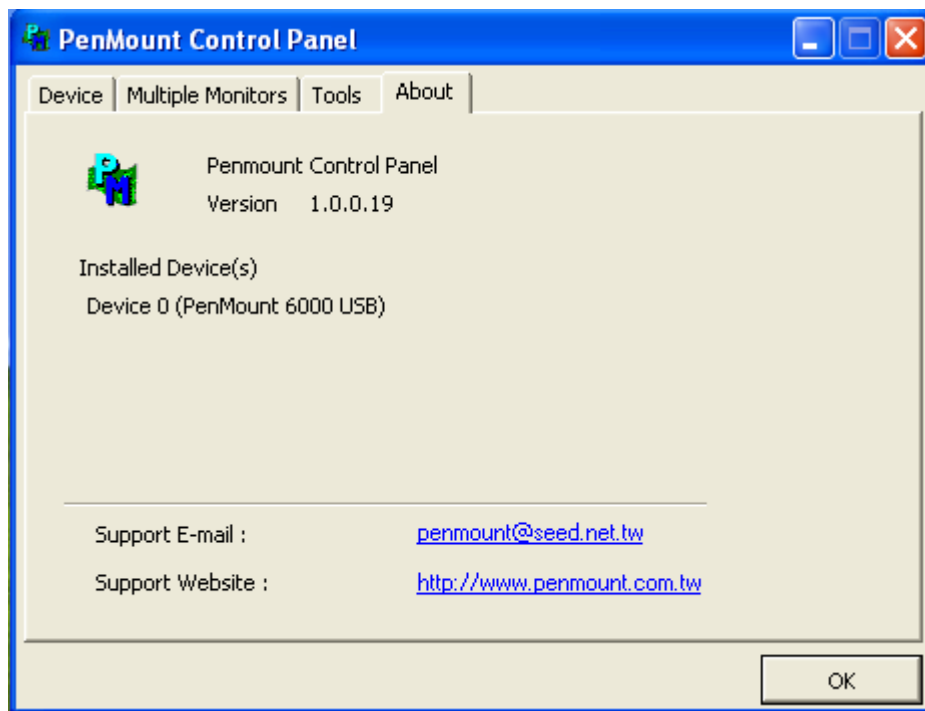
Tools

Draw	Tests or demonstrates the PenMount touch screen operation.
Advanced Calibration	Enable Advanced Calibration function
Right Button Icon	Enable right button function. The icon can show on Desktop or System Tray (menu bar).



About

You can see how many devices of PenMount controller that are plugged to your system

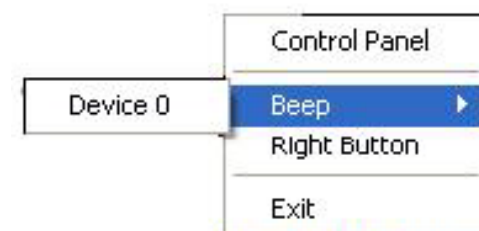



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on PenMount Monitor in PenMount Utilities.



PenMount Monitor has the following function



Control Panel	Open Control Panel Windows
Beep	Setting Beep function for each device
Right Button	When you select this function, a mouse icon appears in the right-bottom of the screen.  Click this icon to switch between Right and Left Button functions.
Exit	Exits the PenMount Monitor function.

PenMount Rotating Functions

The PenMount driver for Windows 2000/XP supports several display rotating software packages. Windows Me/2000/XP support display rotating software packages such as:

- Portrait's Pivot Screen Rotation Software
- ATI Display Driver Rotate Function
- nVidia Display Driver Rotate Function
- SMI Display Driver Rotate Function
- Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



NOTE: The Rotate function is disabled if you use Monitor Mapping